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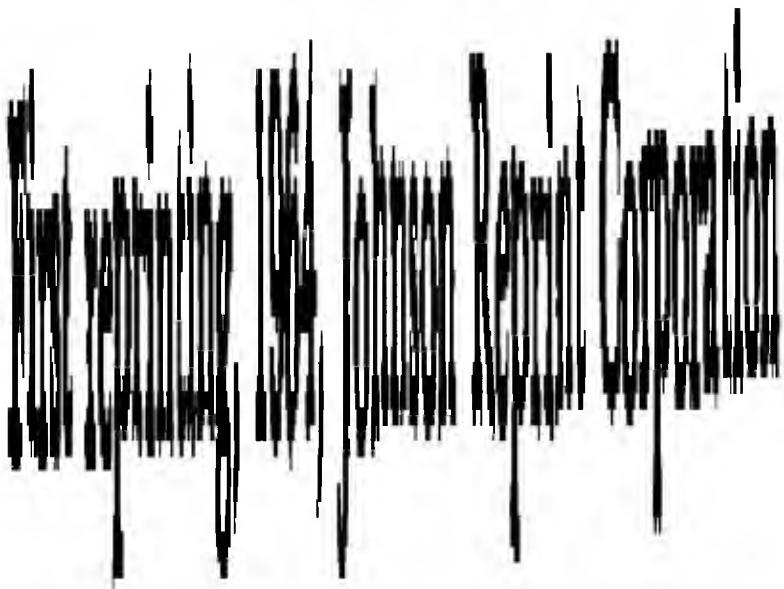
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HENRY HAVELOCK ELLIS: 1859-1939.

By J. C. FLUGEL.

WITH the death of Havelock Ellis there passed away one of the few modern psychologists who have left their mark upon the world without ever holding an academic or official position, and probably the only one who during his whole career never delivered a single lecture or address. His world-wide influence was effected almost exclusively through his writings—his impressive array of published works and his voluminous private correspondence ; in only a very few cases did he establish an intimate contact through the spoken word, and then only with one or two in private, seldom if ever in a larger gathering. But if Ellis was an introvert, in the sense that he shunned all personal relations with humanity in the mass, this did not prevent him from being both widely and exquisitely sensitive to human thought and feeling, whether manifested in larger social groups or in the individual soul. From youth upwards the range of his interests was enormous, though always directed more towards the biological, psychological and æsthetic spheres than to the more purely physical aspects of the universe. There exists an *Index Rerum* dated in his thirteenth year, the items ranging from 'air beds' and 'Chinese amusements' to 'weeds' and 'wild flowers.' In later life his books and essays covered an immense field. Thus in one year (1902) his original published work dealt with such diverse topics as Victor Hugo, 'The Sexual Impulse in Women,' a study of the drug mescal, 'The Genius of Spain' and 'The Bladder as Dynamometer,' while for many years his 'retrospects' in the *Journal of Mental Science* dealt with the recent advances in sociology, anthropology, neurology and psychiatry.

In spite of this vast literary productivity (in the *Psychological Register* there are—apart from translations of his own works or translations made by him of books by others—no less than 236 items up to 1932), he was a relatively slow writer, and liked to let his thoughts mature before committing them to paper. He deliberately postponed the publication of his first book till he was thirty years of age ; he began writing his *Autobiography* when he was forty, while his *magnum opus*, the *Studies in the Psychology of Sex*, was the result of a decision formed before he was twenty and carried out with unhurried deliberation over a period of

thirty years (if we count the actual dates of publication, 1897–1928, though the incubation period was much longer). Indeed, it may be said that from earliest manhood onwards Ellis led a consistent life, steadfast in his plans, endeavours and ideals, and undeflected in his course by praise, blame or any outward circumstance. His was an interesting case of the successful fusion of strong emotional, moral and æsthetic urges with a no less insistent need for intellectual control and intellectual clarity. This fusion took place during a period of 'conversion' in his nineteenth year, while he was acting as teacher in a remote village in the Australian bush. A period of distress, following upon the abandonment of dogmatic religious beliefs and a sense of futility connected with the purely mechanistic view of the universe that seemed at first to be the only alternative, then came to an end with a synthesis of the emotional tendencies underlying both the scientific and the religious urges, a synthesis as a result of which, he tells us, he became "satisfied and at rest, yet utterly unfettered and free." The pursuit of Truth, which in itself had seemed so barren as to lead only to despair, suddenly became blended with, and transfigured by, the appreciation of Beauty, so that in spite of the keenest and continual exercise of all his critical faculties, he could yet say: "To see the world as Beauty is the whole End of Living. . . . All my life has been the successive quiet realization in the small things of the world of that primary realization in the greatest thing in the world." The reading of James Hinton's *Life in Nature* was a factor which played a part in this all important attainment of mental stability, while other works of the same author, discovered shortly afterwards, contributed to Ellis's already urgent pre-occupation with the problems of sex—a pre-occupation due primarily to his own tendency, which he himself well recognized, to 'intellectualize' his moral problems and perplexities, but which also owes something to the influence of George Drysdale's *Elements of Social Science*, a book now largely forgotten but quite astonishingly outspoken for its time and which ran into many successive editions. To the same period of Ellis's life belongs the decision to study medicine (a decision he was able to carry out with the help of one of Hinton's relatives), though without the intention of becoming permanently engaged in medical practice—a course in which he followed in Hinton's footsteps, and which, it is interesting to note, has been adopted also by more than one other eminent psychologist.

Ellis's first publication in book form was *The New Spirit*, a collection of essays in which he tried to discover the essential features of what he felt to be the dawn of a new era—a century after the French Revolution—through a study of five of its representative figures, Diderot, Heine,

Whitman, Ibsen and Tolstoy. The book attracted much, though for the most part unfavourable, attention, one reviewer describing it as an "unpleasant compilation of cool impudence and effrontery." Here already it was the frank treatment of sexual matters that was to a considerable extent responsible for the disapproval, as well as for the general interest, aroused by the book. In the same year (1890) appeared a second and no less successful work, *The Criminal*, in which he introduced to English readers the new methods and viewpoints in criminology that were being developed by Lombroso and other Continental writers. Ellis was by no means a whole-hearted admirer of Lombroso's predominantly biological view of the causation of crime, but was deeply impressed by the importance and possibilities of the scientific approach in this field, especially an approach from the psychological and psychiatric angles. Lombroso's influence was also effective as regards another of Ellis's interests, that in genius, an interest that found expression shortly afterwards in *A Study of British Genius*. In the meantime, there had appeared *The Nationalization of Health*, in which he urged the desirability of a larger public intervention in matters of general hygiene; here, as in so many other ways, he was a pioneer in the advocacy of reforms which have since been largely carried out, or the importance of which has at least been widely recognized. He narrowly missed being a pioneer in yet another field, that of religious psychology, for the book that he first planned and started was on this subject; it was to have contained the results of a questionnaire on conversion, which, if published, would have anticipated by some twenty years the religious studies of James, Starbuck and other American psychologists. The interest in conversion was, of course, connected with his own intimate experience; nevertheless, in spite of, or perhaps because of, its great personal appeal, he decided to postpone the project, thinking it would retain its attraction even in old age and that in the meantime there were other things more urgently demanding the attention of a young man of twenty. Once put aside, the book was never completed, though the theme of religion in its emotional, ethical and social (as distinct from its metaphysical) aspects was never far distant from his thoughts and often found direct or indirect expression, more especially perhaps in *The Dance of Life* (1923). On the side of literature he produced a long series of studies of individual works or authors, many of these studies bearing witness both to his high critical ability and his catholicity of taste, which could appreciate alike, Hardy and Zola, Tolstoy and Nietzsche, Sabatier's book on St. Francis of Assisi and Casanova's Memoirs. Almost equally valuable, and manifesting the same wide and insightful

tolerance, is the series of sociological essays, many of them brought together in such books as *Essays in War Time*, *The Philosophy of Conflict*, and *The Task of Social Hygiene*.

With his large receptiveness combined with a kindly but penetrating power of criticism, it was natural that Ellis should early become aware of the startling but immensely suggestive work of his great contemporary, Freud, and that, while appreciating before others the value of psycho-analysis, he should yet retain a critical awareness of the genuine scientific difficulties raised by many of Freud's theoretic formulations. As early as 1898 he was writing very sympathetically of the *Studies in Hysteria* at a time when this pioneering work was for the most part meeting with neglect, blank incredulity or violent disapproval. Indeed, in some respects Ellis's interests and thoughts were very close to Freud's. Even in 1894, a year before the appearance of the *Studies*, Ellis had written that the part played by the sexual emotions in hysteria was underestimated. He had also begun the study of dreams in an article published before the appearance of the epoch-making *Traumdeutung*, and it is easy to point to many aspects of Ellis's treatment of dreams (subsequently published at greater length in *The World of Dreams*, 1911), which have a distinctly Freudian appearance. Thus Freud himself has considered that Ellis' view that the study of dreams "reveals to us an archaic world of vast emotions and imperfect thoughts" was a happy anticipation of his own view that in dream life there is a regression to primitive modes of thinking which are held in check during waking activity. Nevertheless, in many other respects the two men were poles asunder. Ellis was not capable of those penetrating flashes of insight which enabled Freud to see significant similarities that had escaped the notice of all previous observers; nor had he the urge or the capacity to draw the bold conclusions and make the provocative but highly stimulating generalizations that contributed so much to Freudian theory. With Ellis, the reader feels, the temptation to theorize is constantly and cautiously held in check, with the result that his name is not associated with any new principles, methods or viewpoints of outstanding importance; nor has he founded, or sought to found, any new school of psychology. On the other hand, he did possess a remarkable capacity for assimilating and re-presenting in impartial but ordered fashion a multitude of hitherto largely unco-ordinated facts. When such a capacity is combined, as in Ellis, with the moral determination to apply his talents to a field in which, because of the taboos associated with it, unbiassed judgment is exceptionally difficult, it is easy to realize why his work on the psychology of sex is so extremely valuable.

The late comers among the seven volumes of the famous *Studies in the Psychology of Sex* were classics almost from the moment of their appearance, and we are apt to forget now the long and somewhat sordid story of the difficulties that Ellis encountered in the publication of the first (subsequently changed to second) volume—a story which, though it may reflect somewhat upon Ellis's business acumen, skill in negotiation and judgment of personality, casts a far greater slur upon many others who were concerned in one way or another with the clumsy and discreditable affair of the prosecution, in the course of which the book was described as a "lewd, bawdy, scandalous and obscene libel" which had been published and sold "to the manifest corruption of the morals and minds of the liege subjects of Our Lady the Queen." There is no need to enter here once again into the somewhat complicated details of the prosecution, of which several full accounts have appeared in recent years. It suffices to remind the reader that a whole series of unfortunate events and circumstances prevented the vindication of the truly scientific character of the book, for which preparation had been made by a committee of defence containing several names that were already famous or were shortly to become so. As a consequence, the English edition of the book was withdrawn (it had already appeared in a German translation by Kurella) and arrangements were made for its publication in the United States, all the subsequent volumes of the *Studies* being published by the same American firm. Even to-day, however, the work still falls in the category of publications which can only be bought by those possessing certain professional qualifications: a limitation that sometimes has curious consequences, as when the librarian of one of the largest collections of books in Great Britain, having been instructed by his committee to purchase the last volume on its appearance, was not allowed to do so because he did not personally possess the qualifications in question (the order having therefore to be put through by a member of his committee who did happen to possess them).

Fortunately the restrictions imposed upon the sale of the English editions of the work (it has appeared also in whole or in part in German, French, Italian, Spanish and Japanese translations) have not prevented it from exercising an immense influence in the direction of lifting the nineteenth century taboo on the frank scientific discussion of sexual questions in the common tongue (even Krafft Ebbing, it will be remembered, still felt obliged occasionally to resort to Latin, while the taboo at its strongest had prevented T. H. Huxley from making any reference at all to the reproductive organs or processes in his famous popular book on physiology). Exactly how much of the credit (or, of course, if we

prefer it, discredit) for the great increase in sexual knowledge and enlightenment which has undoubtedly occurred in the twentieth century is due to Ellis—as distinct from other pioneers such as Freud, Forel, Bloch, Moll and Hirschfield—will probably never be determined, but there can be no doubt that, alike as regards priority, scope, knowledge of relevant literary sources, and impartiality of treatment, Ellis has a very special claim for recognition.

The great series of *Studies* was preceded and followed respectively by two other works of importance in the same sphere, *Man and Woman*, an exhaustive study of secondary sexual characters, which first appeared in 1894 and has gone into several editions, and *The Psychology of Sex* (1933), which represents at once an epitome and a more popular presentation of the *Studies*. In the former work Ellis made the important suggestion that one of the most significant differences between the sexes might consist in a slightly greater variability of the male—a suggestion that involved him in his only controversy (with Karl Pearson) but one that has been very usefully taken up by other psychologists such as Thorndike and Burt. In addition to his own vast literary activities, Ellis was often busy as translator and editor. As translator he was instrumental in introducing to the British public such psychological and anthropological treatises as Manaceine's *Sleep*, Ribot's *Psychology of the Emotions*, and Sergi's *Mediterranean Race* as well as literary works such as Zola's *Germinal* and some of Heine's prose. As editor he was responsible, first for the *Mermaid Series* of reprints of Elizabethan and Restoration dramatists, and then for the long and influential *Contemporary Science Series*, many volumes of which have themselves become classics (psychologists will recall at once Ribot's book just mentioned and Scripture's *New Psychology*, the first attempt to explain in detail to a wider public what went on in a psychological laboratory). This double editorship reflects suggestively his rather rare distribution of interest between the literary and scientific spheres. So far as subject matter goes, he would at any university have found himself equally at home in the Faculty of Arts or the Faculty of Science.

In early life Ellis's interest in social reform led him to become secretary of a body known as the Progressive Association, which was a precursor of the much longer lived and more important Fabian Society. However, he never joined the latter organization, and soon discovered that his character and abilities could find more appropriate expression in the quiet of his study (or in the open air, where he preferred to work if possible) than in the crowd and clamour of the meeting hall. He was an Honorary Member of the Royal Medico-Psychological Association and of

the British Psychological Society, but he seldom if ever attended meetings even of a strictly scientific character. Indeed, of Havelock Ellis we can safely say that no modern psychologist has exercised so great an influence with so few personal contacts. He recognized his limitations in the sphere of social life and gracefully accepted them, but with a determination not to be tempted into spheres or activities to which he felt himself unsuited. Of the time and energy thus set free he made the fullest use, not from any desire for fame or influence, but to fulfil his own inner urges and to carry out the tasks to which he felt that he was called. An early critic said of him : " We have seldom met with one who knows so many things that other people do not know." We might add that there have been few who have so consistently laboured throughout a long life to make the fullest use of their knowledge for the pleasure and profit of their fellow-men.

Ellis's last published work was his *Autobiography*, which appeared after his death. It is a book to which he attributed considerable importance, for he held autobiography in high esteem, and wrote his own at intervals from the age of forty onwards at what he thought were the most favourable moments. In spite of the care he lavished upon it, in the opinion of most critics it does not reveal his literary powers at their best. It casts little light upon the development of his thought and personality that was not already available through biographies published before his death. Its most interesting contribution concerns his relations with his wife (*née* Edith Lees), a brilliant extravert personality, which presented a most striking contrast with his own. Though the marriage was clouded by homosexual proclivities on the part of the wife and later by her physical and mental troubles, which terminated at last in a definitely psychotic condition, it was nevertheless held together through the years by a strong mutual affection and respect and by a shared enthusiasm for social reform, which they endeavoured to further according to their respective gifts, she by her writings, on the platform and by a multitude of activities in a variety of places, he by quiet persistence in his literary activities. Edith Ellis died in 1916, and the book tells us little about the last twenty years of his life. It ends, however, on a note of tranquil optimism that is rare nowadays and certainly refreshing to encounter.

THE RELATIVE PERFORMANCES OF ARTS AND SCIENCE GRADUATES IN A TEACHERS' DIPLOMA EXAMINATION.

By H. P. WOOD

(*Department of Education, University of Manchester*).

Introduction.

- I.—*A comparison of the results of all arts graduates and all science graduates in each subject of the diploma examination.*
- II.—*The relation between class of degree and success in the diploma examination.*
- III.—*The results obtained by students with different academic subjects.*
- IV.—*The academic qualifications (class of degree and subject) of students gaining first-class diplomas.*
- V.—*The academic qualifications (class of degree and subject) of students failing the diploma examination.*

Conclusions.

INTRODUCTION.

(a) A preliminary examination of the percentages of students gaining the marks A, B, C, D and E in all subjects of a teachers' diploma curriculum showed that arts graduates usually obtained higher marks than science graduates. The differences appeared so pronounced that it seemed worth while to make a detailed examination of the results obtained over a period of five years by 494 graduates. Evidence was obtained on the following points :

- (i) A comparison of the results of all arts graduates and all science graduates in each subject of the diploma examination.
- (ii) The relation between the class of degree and success in the diploma examination.
- (iii) The results obtained by students with different academic subjects.
- (iv) The academic qualifications (class of degree and subject) of students gaining first-class diplomas.
- (v) The academic qualifications (class of degree and subject) of students failing the diploma examination.

(b) The subjects of the examination were as follows, all being marked on a five-point A-E scale :

Type of Examination.	Subject.	Abbreviation.
Examination Papers ..	(1) Principles of Education .. (2) Educational Hygiene .. (3) Method and Curriculum ..	Prin. Hyg. Meth.
Essays	(4) History of Education .. (5) Psychology (6) Written work for Tutor throughout the year ..	Hist. Psy. W.T.
Practical Teaching ..	(7) Examination Lesson in Teaching (8) Supervisor's Mark for Teaching	E.T. S.T.

(The expression "written work" is used below to include numbers 1 to 6, except where otherwise stated.)

(c) The numbers and qualifications of the students were as follows :

- (1) All Students : Arts, 304 ; Science, 190. Total, 494.
- (2) Graduates of one University :
 - (i) Arts, 287 ; Science, 184. Total 471.
 - (ii) Numbers of students gaining different classes of degrees.
 - (iii) Numbers of students with different academic subjects.

TABLE I.
NUMBER OF STUDENTS IN EACH DEGREE CLASS.

Class of Degree.	Arts.		Science.	
	Number.	Percentage.	Number.	Percentage.
I	40	13.9	40	21.7
II (i)	105 }	68.7	39 }	43.5
II (ii)	92 }		41 }	
III	10	3.5	26	14.1
Ordinary	40	13.9	38	20.7
TOTAL	287	100.0	184	100.0

10 Performances of Graduates in Diploma Examination

TABLE II.

NUMBERS OF STUDENTS WITH DIFFERENT ACADEMIC SUBJECTS.

<i>Subject.</i>	<i>Number.</i>	<i>Subject.</i>	<i>Number.</i>
English	55	Mathematics	25
History	42	Physics	26
Classics	39	Chemistry	28
Geography (B.A.).....	35	Biology	8
Modern Languages	76	General Science.....	49
Ordinary Arts	40	Geography (B.Sc.)	10
		Ordinary Science	38

I.—A COMPARISON OF THE RESULTS OF ALL ARTS GRADUATES AND ALL SCIENCE GRADUATES IN EACH SUBJECT OF THE DIPLOMA EXAMINATION.

(a) *Results expressed in terms of percentages of students receiving each mark.*

An examination of the percentages of arts and science students gaining the marks A, B, C, D and E (Table III) shows that except in hygiene and psychology, where the differences are slight, a higher percentage of arts students obtain the mark A. In every subject the arts students obtain a higher percentage of B's and in every subject but one (the examination lesson in practical teaching) a lower percentage of D's than the science students. The mark E, which denotes complete failure in a single subject, is seldom awarded, but no arts graduates receive this mark.

TABLE III.

PERCENTAGES OF STUDENTS RECEIVING EACH MARK.

	<i>Mark.</i>	<i>Prin.</i>	<i>Hyg.</i>	<i>Meth.</i>	<i>Hist.</i>	<i>Psy.</i>	<i>W.T.</i>	<i>E.T.</i>	<i>S.T.</i>
<i>Arts Students.</i>	A	4.3	1.3	5.3	10.2	5.6	4.9	4.6	5.3
	B	30.9	24.3	28.0	43.1	31.6	49.7	29.9	38.5
	C	55.9	66.5	55.2	44.7	55.2	45.1	62.9	54.6
	D	8.9	7.9	11.5	2.0	7.6	0.3	2.6	1.6
	E	0	0	0	0	0	0	0	0
<i>Science Students.</i>	A	3.1	2.1	2.1	3.7	5.8	1.6	2.6	3.1
	B	22.1	20.5	18.4	31.6	30.0	31.0	26.3	31.6
	C	55.8	61.6	63.2	54.7	52.1	65.8	69.6	61.6
	D	15.8	14.2	12.3	10.0	11.1	1.6	1.0	3.7
	E	3.2	1.6	1.0	0	1.0	0	0.5	0

(b) Results expressed in the form of observed and expected frequencies

Table IV gives the observed frequencies of the marks in three categories (A+B), C and (D+E), for all the students taking the examination. If we assume that there are no significant differences between the proportionate frequencies of arts and science students in the various categories, we may calculate the expected frequencies knowing the proportion of arts to science students to be 304 to 190.

TABLE IV.

OBSERVED FREQUENCIES OF MARKS FOR ALL STUDENTS

Group.	Prin.	Hyg.	Meth.	Hist.	Psyc.	W.T.	E.T.	S.T.
(A+B).....	155	121	140	229	181	228	160	199
C	276	319	288	240	287	262	323	263
(D+E).....	63	54	86	25	46	4	11	12
TOTAL	494	494	494	494	494	494	494	494

TABLE V.

OBSERVED AND EXPECTED FREQUENCIES OF MARKS FOR SCIENCE AND ARTS STUDENTS.

O=Observed Frequency. E=Expected Frequency.

Subject,	Prin.	Hyg.	Meth.	Hist.	Psyc.	W.T.	E.T.	S.T.
	O. E.	O. E.	O. E.	O. E.	O. E.	O. E.	O. E.	O. E.
(A+B)	107 95.4	78 74.5	101 86.2	162 140.9	113 111.4	166 140.3	105 98.5	133 122.4
	48 59.6	43 46.5	39 53.6	67 88.1	68 69.6	62 87.7	55 61.5	66 76.6
C.....	170 169.8	202 196.3	168 177.2	136 147.7	168 164.3	187 161.2	191 198.8	166 174.2
	106 106.2	117 122.7	120 110.8	104 92.3	99 102.7	125 100.8	132 124.2	117 108.8
(D+E)	27 38.8	24 33.2	35 40.6	6 15.4	23 28.3	1 2.5	8 6.8	5 7.4
	36 24.2	30 20.8	31 25.4	19 9.6	23 17.7	3 1.5	3 4.2	7 4.6

In all subjects the observed frequency in the (A+B) group is greater than the expected frequency in that group for arts students and less than the expected frequency for science students. In the (D+E) group the observed frequency is less than the expected frequency for arts students and greater than the expected frequency for science students, except in the case of the examination in practical teaching.

12 Performances of Graduates in Diploma Examination

In order to discover whether the differences between the results of arts and science students are significant, i.e., whether the differences between the distributions of observed and expected frequencies are merely due to chance, a test of the goodness of fit of the two distributions was applied. Application of the chi squared test of goodness of fit¹ showed that, except for the psychology essay, the differences between the results of arts and science students are highly significant in all subjects under the heading of written work.

In the case of the psychology essay, the science students often choose subjects involving some kind of mental testing and statistical work and thus any literary handicap is less obvious in this case.

The differences in the practical teaching results are not significant. The supervisor's mark shows a greater divergence from the expected mark than is the case with the mark for the examination in practical teaching, probably because of differences of standard between supervisors.

(c) A 'Summary' mark for Arts and Science Students.

In an attempt to express the results in a number of subjects in a simple way the marks A, B, C, D and E were given numerical equivalents 5, 4, 3, 2 and 1 respectively. For the six subjects included under the

¹ (a) For a discussion of the χ^2 test of goodness of fit see :

VERNON, P. E : *The Measurement of Abilities*. (University of London Press, 1940, pp. 102-4, 123-124); and

FISHER, R. A. : *Statistical Methods for Research Workers*. (Oliver and Boyd, 1930, Chapter IV, pp. 75-98.)

(b) From the data in Table V the values of χ^2 were calculated for each subject.

TABLE VI.
VALUES OF χ^2 FOR EACH SUBJECT.

Subject.	Prin.	Hyg.	Meth.	Hist.	Psyc.	W.T.	E.T.	S.T.
χ^2	13.01	7.48	9.86	24.56	2.91	16.33	2.47	5.41

Since there are 3×2 cells in each table, the number of degrees of freedom for each value of χ^2 is 2×1 . Assuming the "null hypothesis" (that the differences between the results of arts and science students are not significant), then the chances of obtaining a value of χ^2 greater than or equal to 5.991 are one in twenty. In the written work this value is exceeded in every case in Table VI (except for the psychology essay), so that the "null hypothesis" may be considered to be disproved, taking the 5 per cent significance level.

The more stringent 1 per cent significance level would only add hygiene to the psychology essay. In other subjects the differences are significant even on this level.

general heading of written work the frequencies in each mark group were added and the arithmetic mean calculated. A similar procedure was adopted for the two practical teaching marks

TABLE VII.
MEAN MARKS FOR WRITTEN AND PRACTICAL WORK.

	Written.		Practical.	
	Arts.	Science	Arts.	Science.
Mean	3.38	3.19	3.42	3.32
S.E. of Mean	0.016	0.021	0.025	0.031
Difference of Means	—	0.19	—	0.10
S.E. of Difference..	—	0.027	0.025	0.039

This method of summarizing the results serves to illustrate in another way that the differences observed are significant as far as written work is concerned.

II.—THE RELATION BETWEEN CLASS OF DEGREE AND SUCCESS IN THE DIPLOMA EXAMINATION.

(a) *Results for all students with different classes of degrees.*

Table VIII gives the mean marks for written and practical work for students with different classes of degree. For the written work the mean marks are in the order of degree for honours graduates. Though the mean mark for students with ordinary degrees is higher than that for third-class honours graduates, the difference is not significant. In practical teaching the mean marks are again in the order of degrees but the difference between one class and the next is only significant in the case of first and second-class honours graduates.

TABLE VIII.
MEAN MARKS FOR WRITTEN WORK AND PRACTICAL TEACHING ACCORDING TO CLASS OF DEGREE. ALL STUDENTS.

Degree.	Written Work.			Practical Teaching.		
	Mean	Diff. of Means.	Standard Error of Diff.	Mean.	Diff. of Means.	Standard Error of Diff.
I	3.61	—	—	3.68	—	—
II	3.40	0.21	0.040	3.38	0.30	0.067
III	2.94	0.46	0.051	3.24	0.12	0.071
Ordinary	3.04	-0.10	0.049	3.13	0.11	0.065

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(b) Results for Arts and Science Students with different classes of degrees.

TABLE IX.

MEAN SCORES FOR WRITTEN WORK AND PRACTICAL TEACHING
FOR ARTS AND SCIENCE GRADUATES WITH DIFFERENT
CLASSES OF DEGREES.

W=Written Work. *P*=Practical Teaching.

Degree.	Arts.			Science.			Arts and Science.	
	Mean.	Diff. of Means.	S.E. of Diffs.	Mean.	Diff. of Means.	S.E. of Diffs.	Diff. of Means.	S.E. of Diffs.
<i>W</i>	I	3.72	—	3.50	—	—	0.22	0.069
	II	3.36	0.36	3.27	0.23	0.060	0.13	0.036
	III	3.08	0.28	2.89	0.98	0.073	0.19	0.084
	Ordinary	3.18	-0.10	2.90	-0.01	0.086	0.28	0.059
<i>P</i>	I	3.81	—	3.52	—	—	0.29	0.11
	II	3.38	0.43	3.38	0.14	0.092	0.0	0.054
	III	3.35	0.03	3.19	0.19	0.081	0.16	0.14
	Ordinary	3.17	0.18	3.08	0.11	0.086	0.09	0.081

From Table IX it appears that for the written work :

- (i) The mean scores for both arts and science students are in the order of degrees in the case of honours graduates.
- (ii) The differences between the scores of ordinary and third-class honours graduates are not significant in either case. The most noticeable differences are between the results of third-class and second-class honours science graduates and between the results of first-class and second-class honours arts graduates.
- (iii) The last two columns of Table IX show the comparison between arts and science graduates class by class.¹ The differences between the corresponding classes are always in favour of the arts students, being most marked in the case of graduates with ordinary and first-class honours degrees.

¹ The χ^2 test was applied in the same way as previously in order to discover if there were any significant differences between the results of arts and science graduates with the same class of degree, in particular subjects of the curriculum. The eight subjects of the examination and five classes of degree give forty possible cases for consideration. It was found that in thirty out of forty cases the arts graduates showed a higher observed frequency than expected frequency in the (A+B) group and in thirty-three out of forty cases they showed a lower observed than expected frequency in the (D+E) group. However, the χ^2 test showed that only in three cases—first-class honours, written work for tutor; ordinary degree, method examination and history essay—were the differences between the observed and expected frequencies of arts and science students significant. The values of χ^2 in these cases were 9.60, 6.54 and 9.52 respectively.

In the practical teaching the means are again in the order of degrees for both arts and science students, but the only marked difference between classes is that between the first and second-class honours arts students. The differences between the results of arts and science graduates in the corresponding classes are always in favour of the arts students, but in no case, taken alone, are they significant.

A discussion of the relation between class of degree and success in the diploma examination necessarily raises the question as to whether the results as a whole are affected by the distribution of the arts and science students in the various degree categories.

It is clear from Table I that the proportion of first-class degrees is higher among science students, while the arts students obtain a higher percentage of second-class degrees. The group containing third-class honours and ordinary degrees contains twice as many science as arts students.

These results agree closely with the figures given by C. W. Valentine in *The Reliability of Examinations*, where the distribution of arts and science students in the various degree categories is shown for five provincial universities.¹

It has been shown in Table IX that the scores obtained in the diploma examination by the science students in the lower groups (third-class and ordinary degrees) are less than those obtained by the corresponding arts groups. It seems reasonable to suppose, therefore, that the low average score made by science students as a whole must be partly brought about by the fact that the poor performance of the relatively large lower groups outweighs any advantage gained by the higher proportion of firsts relative to arts students.

If the mean scores for written work given in Table IX for each class of science degree are accepted and the mean is re-calculated for a group with the same proportion in each class as the arts students, the mean score for science students becomes 3.24 instead of 3.19 for the written work. This seems to suggest that the differences in the mean scores of arts and science students are not solely caused by the different distributions in the degree classes.

III.—THE RESULTS OBTAINED BY GRADUATES WITH DIFFERENT ACADEMIC SUBJECTS.

When the students are classified according to their academic subjects the resulting groups are in some cases very small. It is obvious that, though the results shown in Table X are in accordance with the previous

¹ C. W. VALENTINE, loc. cit. (London University Press, 1932, pp. 115–116.)

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conclusions in favour of arts students, the differences between one group and the next cannot be significant.

TABLE X.
MEAN SCORE ON WRITTEN WORK FOR STUDENTS WITH DIFFERENT ACADEMIC SUBJECTS.

<i>Subject.</i>	<i>Mean Score.</i>	<i>Subject.</i>	<i>Mean Score.</i>
(1) Geography (Arts)	3.50	(6) Physics	3.29
(2) English	3.44	(7) Chemistry	3.28
(3) History	3.41	(8) General Science.....	3.26
(4) Classics	3.40	(9) Biology	3.25
(5) Modern Languages	3.34	(10) Geography (Science) ..	3.23
		(11) Mathematics	3.23
		(12) Ordinary Arts	3.18
		(13) Ordinary Science	2.90

It is rather remarkable that the results should arrange themselves in such an order, i.e., all honours arts subjects; all honours science subjects; ordinary arts and ordinary science. In the case of isolated subject groups the differences are significant, e.g.,

English Honours and Ordinary Arts :

Difference of Means 0.26 (S.E. 0.054).

Physics Honours and Ordinary Science :

Difference of Means 0.39 (S.E. 0.077).

IV.—THE ACADEMIC QUALIFICATIONS (CLASS OF DEGREE AND SUBJECT) OF STUDENTS GAINING FIRST-CLASS DIPLOMAS.

(a) The percentage of arts graduates gaining first-class diplomas is 8.9 compared with 7.4 per cent of the science graduates. Though the same general tendency is apparent, the difference of 1.5 per cent has a standard error of 2.50 and is, therefore, not significant.

(b) Table XI gives the corresponding percentages for students with different classes of degrees.

TABLE XI.
FIRST-CLASS DIPLOMAS GAINED.

<i>Degree.</i>	<i>Percentages of Students.</i>		
	<i>Arts.</i>	<i>Science.</i>	<i>All.</i>
I	30.0	15.0	22.5
II	5.6	7.5	6.1
III	0	0	0
Ordinary.....	2.5	0	1.2

It will be seen that the chances of a first-class honours graduate obtaining a first-class diploma are approximately 1 in 3 for arts students and 1 in 6 for science students. Ordinary and third-class honours students appear to have little chance of obtaining a first-class diploma.

Investigation showed that the geography and English honours students obtained high percentages of first-class diplomas among the arts graduates and the physics and chemistry students among the science graduates. Owing to the smallness of the groups concerned the figures could not be regarded as significant.

V.—THE ACADEMIC QUALIFICATIONS (CLASS OF DEGREE AND SUBJECT) OF GRADUATES FAILING THE DIPLOMA EXAMINATION.

(a) The percentage of failures in the examination as a whole is 12·6, 6·9 per cent of the arts graduates failing and 20·7 per cent of the science graduates. The difference of 13·8 per cent with a standard error of 3·28 per cent is significant. The chances of a science graduate failing are approximately 1 in 5 as against 1 in 14 for arts graduates.

In general, the failures were caused by weakness in practical teaching coupled with weakness in other parts of the examination. In only 5 per cent of the cases of failure was failure in practical teaching the sole cause.

Table XII shows that the differences between the scores of the students gaining a diploma and those failing, exist in all parts of the examination, being most serious in the written examination papers.

TABLE XII.

THE MEAN SCORE IN EACH SUBJECT OF THE EXAMINATION :
(A) STUDENTS AWARDED A DIPLOMA, (B) STUDENTS NOT AWARDED
A DIPLOMA.

<i>Subject.</i>	<i>Prin.</i>	<i>Hyg.</i>	<i>Meth.</i>	<i>Hist.</i>	<i>Psyc.</i>	<i>W.T.</i>	<i>E.T.</i>	<i>S.T.</i>
(A)	3·33	3·23	3·28	3·57	3·41	3·56	3·40	3·50
(B)	2·37	2·55	2·52	2·95	2·76	3·00	2·92	2·92
Difference	0·96	0·68	0·76	0·62	0·65	0·56	0·48	0·58

If the failures only are considered and the mean scores of the arts and science students compared as in Table XIII, it appears that the science students again show great weakness in the written work, particularly in the Principles of Education and the History of Education essay.

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TABLE XIII.
THE MEAN SCORE IN EACH SUBJECT FOR ARTS AND SCIENCE STUDENTS
NOT AWARDED A DIPLOMA.

<i>Subject.</i>	<i>Prin.</i>	<i>Hyg.</i>	<i>Meth.</i>	<i>Hist.</i>	<i>Psyc.</i>	<i>W.T.</i>	<i>E.T.</i>	<i>S.T.</i>
Arts	2.65	2.70	2.52	3.15	2.80	3.05	2.80	2.95
Science	2.20	2.47	2.52	2.86	2.74	2.97	2.97	2.90
Difference	0.45	0.23	0.00	0.29	0.06	0.08	-0.17	0.05

(b) Table XIV gives the percentages of failures for students with different classes of degrees.

TABLE XIV.
PERCENTAGES OF STUDENTS NOT AWARDED DIPLOMA.

<i>Degree.</i>	<i>Percentages of Students.</i>		
	<i>Arts.</i>	<i>Science.</i>	<i>All.</i>
I	0	10.0	5.0
II	7.6	8.7	7.9
III	0	46.2	33.3
Ordinary.....	12.5	39.6	25.6

The table shows that no first-class honours arts student fails to gain a diploma while 10 per cent of the corresponding science students fail. The percentage of failures among third-class honours and ordinary degree science students is very high (46.2 per cent, S.E. 9.78 per cent. and 39.6 per cent, S.E. 9.73 per cent respectively). The chances of failure are approximately 1 in 2 in the one case and 1 in 2.5 in the other.

The highest percentages of failures occur in the history honours and ordinary degree groups for arts students and in the geography honours and ordinary degree groups for science students, though, owing to the smallness of the groups, any figures obtained could not be regarded as significant.

CONCLUSIONS.

The results of this analysis indicate that the performances of arts graduates in all parts of the diploma examination are better than those of the science graduates. The observed differences are found to be significant for the six sections of the examination included under the heading written work. They are apparent also, but not significant, in the results for practical teaching.

Detailed analysis on the basis of degree and subject groups substantiates the general conclusion, though, owing to the small size of some

of the groups concerned, the statistical significance of the results is not great.

The general conclusion is further substantiated by the results for failures in the diploma examination.

The observed differences are significant and more serious in the case of third-class honours and ordinary degree science students. The fact that these two degree groups form a larger proportion of the whole in the case of science students clearly contributes to the low general level of the scores of science graduates. It does not seem, however, that this factor of distribution of students in the degree classes is sufficient to explain the differences observed when arts and science students are compared as a whole.

It is indeed difficult to account for the results obtained. Their consistency, and the statistical tests applied, suggest that they are not solely due to chance. They may, of course, be the result of the peculiarities of a particular department with regard to selection of students, methods of examination or other domestic factors. If they represent real differences in the students the problem merits serious consideration.

It is tempting to suggest that the observed differences may, in part, be the results of the previous training of the students concerned. The science students, because of their training, may have difficulty both in reading and writing continuous prose. Compared with graduates in modern languages, for instance, who have become adept at expression in oral work and have spent a year abroad, the science student may appear inarticulate.

If previous training is an important factor, one must consider the effects of at least five years of specialization. Differentiation and specialization begin in the schools, when the pupil chooses his course after passing the School Certificate examination. In many cases the choice will be made because of marked ability in particular subjects. In others, lacking particular distinction, a pupil will joyfully give up distasteful subjects. The arts student who thus goes on his way in ignorance of mathematical and scientific principles suffers no apparent loss in the approach to his future studies. The science student, who may already be woefully weak in the art of reading, writing and speaking his mother tongue, follows a five-year course of training which does nothing to cure and much to accentuate this weakness.

Further evidence is being accumulated to illuminate this problem.

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THE RELATION OF READING DISABILITY TO HANDEDNESS AND CERTAIN OCULAR FACTORS

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PART II.

VII.—*Combinations of handedness and eyedness amongst backward and normal readers.*

VIII.—*Case study.*

IX.—*Left-handedness and squint.*

X.—*Summary and conclusions.*

VII.—COMBINATIONS OF HANDEDNESS AND EYEDNESS.

In this part of the study backward readers were tested for handedness and eyedness. Tests of writing, throwing, winding, cutting, hammering, sorting and stirring were used to determine present hand preference, while home and school history schedules revealed changes of preference of hand in writing. Left-handedness was taken to mean the hand most often preferred in the operations listed above. In sighting, the pupils had to sight an object through a hole in a piece of cardboard. A supplementary list consisted of 'measuring the length' of a box by aligning it with a pencil held in the hand. Reliable evidence was obtained from only 73 cases.

The results are given in Table IV.

TABLE IV.

HAND AND EYE RELATIONSHIPS AMONGST 73 BACKWARD READERS AND A CONTROL GROUP OF 75 NORMAL PUPILS. (IN PERCENTAGES.)

<i>Relationship.</i>	<i>Backward Readers (73).</i>	<i>Normal Pupils (75).</i>	<i>Creak Cases (50).</i>	<i>Monroe Cases (215).</i>
(i) R.H. and R.E.	43	60	24	47
(ii) R.H. and L.E.	40	25	18	35
(iii) L.H. and L.E.	5	4	12	8
(iv) L.H. and R.E.	8	3	12	3
(v) R.H. and either eye	3	8	6	6
(vi) L.H. and either eye	1	0	2	1

The figures derived from 73 cases are compared with those of Creak¹ and Munroe.² Creak's somewhat different distribution may be accounted for by the fact that the I.Q.'s of her 50 backward readers were : I.Q. 70-90, 66 per cent ; I.Q. 90 and over, 34 per cent ; and generally speaking the lower down the intellectual scale the more left-handedness and dextro-sinistrality do we find. Munroe's figures relate only to writing with the left or right hand and her 215 backward readers divided into approximately 51 per cent of I.Q. 90 and over ; 49 per cent under I.Q. 90. The 73 backward readers referred to in this study were distributed as follows : I.Q. 90 and over, 67 per cent ; below I.Q. 90, 33 per cent.

An examination of the observed differences between backward readers and normal pupils showed that statistically significant differences³ in favour of the backward readers are found amongst the left-handed and right-eyed—a small group of six pupils—and amongst a larger group of right-handed and left-eyed backward readers. This seems to indicate that amongst backward readers there are two groups whose disability in reading may, in part, be caused by the particular combination of handedness and eyedness they display.

The question arose, "How do such combinations of writing and sighting preferences influence ability in reading, and what is the qualitative nature of the handicaps they occasion?" An answer to the first question must, to some extent, be speculative, for the exact relationship of these factors, inherited and acquired, in handedness⁴ and eyedness have not yet been determined. Ocular preference may be established by hand preference, or conversely hand preference may follow eye preference. On the other hand, eye preference may be due to differential visual acuity.

¹ CREAK, M. : "Reading Difficulties in Children," *Arch. of Disease in Children*, June, 1936, p. 151. It will be noted that Creak's distribution is incomplete by 28 per cent. Dr. Creak gives, in her table, three other categories of backward readers, namely, ambi H and R.E. (16 per cent) ; ambi H. and L.E. (8 per cent) ; and ambi H. and ambi E. (2 per cent). The presence of these may be due to the uniqueness of sampling, but I was unable to find any pupil in my group of backward readers whom I could really catalogue as ambidextrous. A year after I had completed my investigation, I found this confirmation in Dr. Burt's work, 'This confirms my conclusion that ambidexterity is extremely rare and suggests that, as soon as the child begins to form manual habits, a genuine ambidexterity becomes almost non-existent. *The Backward Child*, p. 282. On the other hand the fact that Dr. Creak's findings of handedness and eyedness for each pupil were independently checked, demonstrates the extreme complexity of the problem of handedness and eyedness.

² MONROE, M. : *Children Who Cannot Read*, p. 85. (University of Chicago Press.)

³ Using $\sigma(p_1 - p) = \sqrt{pq} \left(\frac{1}{n_1} + \frac{1}{n_2} \right)$ where p_1 and p_2 are the proportions found in the samples n_1 and n_2 of the characteristic under consideration, $p = \frac{p_1 n_1 + p_2 n_2}{n_1 + n_2}$ and $q = 1 - p$, and applying the usual criterion.

⁴ By far the most comprehensive and psychologically sound consideration of the problem of handedness is Dr. Burt's masterly analysis in *The Backward Child*, Chapter X, 'Left-handedness,' pp. 270-359.

It has been previously stated that the young child's perception of certain word and letter forms is frequently inaccurate, but with an increase in maturity and experience so this form of perceptual power increases. It is conceivable, therefore, that children, whose hand movements and eye movements (both of which are important in perception, for manual movement assists in establishing correct perception through kinæsthetic impressions, and ocular movements are involved in recording spatial setting and organization of the percept) do not consistently fuse to give an augmented impression of word patterns in a right-left setting, might lag somewhat behind other children, in ability to recognize and recall word forms. The child whose manual and ocular attitudes influence him in regarding some words from a right to left or a middle to left direction might experience difficulty in reading and might require assistance in stabilizing a consistent left to right perceptual attack on words. Certainly some of the worst cases of backward readers experienced during the investigation were left-handers who showed pronounced right-left or middle-left perception of words, and whose manual movements were of a right-left kind.

But to complete the examination of the ocular manual theory of reading disability there is a further point to be considered, namely, that the backwardness of no less than 72 per cent of the mixed dextrals and mixed sinistrals is also associated with important emotional attitudes, with emotional instability and /or with certain auditory perceptual weaknesses. In some cases it would seem that the emotional instability and the weakness in auditory discrimination¹ have in themselves been intense enough to cause backwardness. In other instances the present poor attainments in reading appear to be more intimately connected with emotional attitudes of resentment, inferiority and apathy than with the inaccurate perceptual attack, although, in the initial stages, this may have started the emotional condition.

VIII.—CASE STUDY.

Illustrative of the backward reader who was left-handed and right-eyed was Leslie E., aged 12 years. Here, too, the backward condition was accentuated by emotional factors and by a certain weakness in auditory perception. The emotional inhibitions seemed to have developed round a mental deficiency examination which the boy was given when aged nine years. The report of the school medical officer shows that Leslie

¹ For a further consideration of the influence of weakness in auditory discrimination on verbal attainments, see SCHONELL, F. J., "The Relation between Defective Speech and Disability in Spelling." This *Journal*, IV, Part 2, June, 1934.

was not certified as mentally deficient, but the head mistress of the junior school, the boy's parents, his classmates, and even he himself, thought that he had been given some 'doubtful classification.' The class teacher of the Senior School reported of Leslie that 'he was in the habit of expecting to be treated differently from others and to be waited upon when he entered the school.' He explained to his teacher that he had had a certificate for three years (meaning that he had been certified M.D.).

On a verbal group test he obtained a mental age of seven years (but being a non-reader the result is obviously invalid). On a formboard he gained a mental age of ten. His I.Q. on the Terman Binet Scale was 83. His arithmetic age was nine, but in reading and spelling his attainments were little better than those of a 5½ year old. He expressed himself adequately and fluently, showing at the same time a good memory of events.

Tests showed that he did almost every activity left-handed, while he kicked with the left foot, but sighted with the right eye. In writing he moved his pen in a clockwise direction to make such letters as 'o,' 'a' and the round parts of letters like 'd' and 'g.' He wrote :

'I live in the valsí of W—— which is boau two mot come T—— cah day I came to school no my bayck. Wowe ti nairs I war my mone lore and retcow. I bo not go mole to bina won the is boig dut mane eaer whre a bre vife nren cderne.'

('I live in the village of W—— which is about two miles from T—— each day I come to school on my bike. When it rains I wear my new leggings and raincoat. I do not go home to dinner when the (weather) is bad, but remain here with about fifty other children.)

The weakness of his auditory analysis is evident in his spelling errors, for many of them are not even passable phonetic analogies; but more interesting is the number of reversals and part reversals, thus :

valsí—village	come —from	ti —it
boau—about	no —on	mone —new
bo —do	bina —dinner	vife —fifty
mole—home	eaer —here	cderne —children

These errors show that he tends to recall the patterns of many words in a reversed or partially reversed form, distorted at times by poor auditory analysis and synthesis.

This reversal tendency apparent in his writing is pronounced in his reading, and at once suggests that it has played an important part in his reading disability. His visual attack is made, in the case of many small words, from right to left, and thus results in a complete or almost complete reversal. For example, he reads, 'on' as 'no'; 'rag' as 'gar';

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'dog' as 'god.' With larger words he starts, not infrequently, in the middle and then proceeds to the left, or occasionally he will vary the procedure by commencing in the middle of the word then going to the end letter or to the initial letters. But whatever the combination decided upon, his final effort bears definite evidence of most uncertain perceptual methods dominated by a right to left attack. Samples of these are:

- 'under' read as 'duner'
- 'after' read as 'fater'
- 'recovered' read as 'oreved'
- 'ramble' read as 'bamble'

In such cases as this it would seem that the ocular-manual preference theory applies and without doubt some of the reading progress made by the boy was due to a recognition of this fact and to the adoption of writing and tracing aids which provided manual cues for a recognition of words from left to right. Nevertheless, progress would have been slow if the other disability factors—lack of auditory discrimination and emotional inhibitions¹ had not been combatted by supplementary work, on common phonic word families and by a broad programme for re-establishing the boy's confidence in his own intellectual powers. With a sounding-saying-tracing-writing procedure he made good progress and his head master recently informed me that the boy could read fairly well when he left school.

In conclusion, the explanation of the perceptual inaccuracy of backward readers in terms of ocular and manual inconsistency seems to have some practical confirmation in the nature of the reversals and part reversals made by some right-handed-left-eyed (mixed dextrals) and left-handed-right-eyed (mixed sinistrals) pupils such as Leslie E. But we have to remember that there are many mixed dextrals and mixed sinistrals who are excellent readers both in speed and accuracy, that the confusion and transposition of letters and reversal tendencies are more prevalent amongst all backward readers than normal ones, that such errors are not a prerogative of the left-hander or the mixed dextral, and that they are not for many backward readers errors of importance.

A detailed examination of all mixed dextrals and sinistrals amongst my reading disability cases has convinced me that the manual-ocular theory of their disability is an over-simplification of the problem,² for

¹ In another interesting case of an intelligent boy aged eight, I.Q. 119, reading age six, the emotional difficulty was equally important, for the school maintained that the boy should be allowed to write with his left hand while his parents were inclined to require him to write with his right hand. The discussion of the problem had produced in the child a somewhat stubborn, unduly assertive attitude.

² See also Miss MUNROE's cases in *Children Who Cannot Read*, pp. 81-92.

usually there are other factors entering into the reading disability, but in so far as it explains some of the difficulty of a few backward readers and in so far as it focusses attention upon certain forms of perceptual difficulties and emphasizes the value of kinæsthetic impressions in teaching backward readers, then it has educational value.

IX.—LEFT-HANDEDNESS AND SQUINT.

Finally, brief reference might be made to the allied combination of left-handedness and squint. In general, the proportion of all backward readers suffering from squint is 5 per cent amongst boys and 3 per cent amongst girls, as compared with 4 per cent and 2 per cent respectively amongst normal readers. In a few instances where the backward readers suffering from squint were also left-handers they showed a transitory period of mirror writing. The following sentences copied by a backward reader aged seven after the material had been read aloud with other pupils is an example of this condition :

26115112
blo nD 2Dw yifimit
b9110w odw 1911100
191111/ gniidom pao/ xpb 11o
s20d12

The mirrored form of the material illustrates conclusively that after the pupil had glanced at the word to be written he simply allowed his left-hand to pursue its natural right to left movement uncorrected or uninfluenced by any visual check.

Space does not permit of a discussion of the psychology of mirror writing,¹ but evidence seems to indicate that it is most common at the ages of six, seven and eight in left-handers (where visual control is

¹ See *Mirror Writing*, CRITCHLEY, M., Psyche Miniatures No. 11 (Kegan Paul, 1928), particularly Chapter I dealing with the clinical aspects of mirror writing and the various causal factors at work. See also *The Backward Child*, BURT, C., pp. 341-359, and "A Study of Ocular and Manual Preference in Mirror Reading," KIRK, S. A. *J. of Genetic Psychology*, March, 1934, Vol. XLIV, No. 1.

relaxed through squint or structural visual defects) or where there is some general relaxation of mental control.¹ The relaxation of mental control may be produced by emotional instability.

X.—SUMMARY AND CONCLUSIONS.

(1) The study concerns 104 backward readers whose intelligence quotients were in the main 85 and over. Their reading ability was at least $1\frac{1}{2}$ years below their mental age for general intelligence.

(2) Complete case studies (see the 10 point case study schedule) were made of all pupils. Information was thus obtained on intellectual, scholastic, emotional, physical and environmental characteristics.

(3) To all pupils five reading tests were given.

(4) The characteristics of visual perception of the backward readers with the various forms of reading material were catalogued and analysed (Section III).

(5) Theories of reading disability are critically examined in the light of information from the present study.

(6) The relationship between certain types of perceptual errors and left-handedness is examined and it can be inferred that left-handedness *per se* is not a cause of reading disability.

(7) Orton's theory that reading disability is due to failure to train the brain to work exclusively from the leading or dominant hemisphere as regards the perception of words is examined in detail.

(8) Backward readers and normal pupils are compared in respect to their errors in confusion and transposition of letters ('b,' 'd') and reversal of words (e.g. 'no,' 'on'). These types of error were found to be much more frequent amongst backward readers of all ages, but particularly up to 9+, after which confusion and reversal in both reading and writing diminishes fairly rapidly.

Certain backward readers do not show these types of error at all in their reading disability, a point against Orton's dominance theory.

(9) Seventy-three backward readers and 75 normal readers were given tests to determine their preferred hand in manual operations and their preferred eye in sighting. Six categories of pupils (R.H. with R.E. ; R.H., L.E. ; L.H., L.E. ; L.H., R.E. ; and R.H. with either eye ; L.H. with either eye) were found. There were more R.H., L.E. and L.H., R.E. amongst backward than amongst normal readers.

¹ Recently I found amongst my post-graduate students an intelligent girl (a case of congenital left-handedness, now writing with the right hand) who could mirror write quite fast with the left hand provided she did not think what she was doing. If she tried to do the mirror writing she was unable to proceed. She had been converted from left to right hand between the age of six and seven years, a change which she greatly resented.

(10) There is evidence that the disability of a few backward readers is in part due to their mixed eyedness and handedness. This is particularly the case with respect to left-handers who are right-eyed. A typical case is cited in detail.

The manual and ocular inconsistencies of such pupils seems to show itself in a greatly increased tendency to reversal and part reversal of words. Their inaccurate right-left perception is evident in both their writing and their reading.

Evidence that the inconsistent manual and ocular characteristics of the pupils only partly accounts for their disability is found in the large proportion of fairly intense emotional problems associated with their backwardness, and /or the accompanying weakness in auditory discrimination in the verbal field displayed by some pupils.

(11) The remedial measure most effective with these children was the sounding (or saying)-tracing-writing (from memory) method. Most of them made good progress where the kinæsthetic impressions of tracing and writing (of their preferred hands) were used to offset any visual-manual inconsistency. Supplementary practice with common phonic families also helped these pupils.

(12) Three of the left-handed backward readers who suffered from squint at some time during their disability showed transient periods of mirror writing.

THE ATTITUDE OF CENTRAL SCHOOL PUPILS TO CERTAIN SCHOOL SUBJECTS, AND THE CORRELATION BETWEEN ATTITUDE AND ATTAINMENT.*

By DAVID JORDAN.

I.—*Introduction: purpose and scope of the investigation.*

II.—*Method:*

- (1) *Preliminary statements.*
- (2) *The questionnaires.*
- (3) *The attitude scale.*

III.—*Results:*

- (1) *General results.*
- (2) *Attitude towards French.*
- (3) *Attitude towards mathematics.*
- (4) *Attitude towards history.*
- (5) *Attitude towards English.*
- (6) *Attitude towards geography.*

IV.—*The measure of correlation between attitude and attainment.*

V.—*Summary of results and conclusions.*

VI.—*Appendix.*

I.—INTRODUCTION.

THE purely cognitive aspects of the learning process are being continually investigated. The affective side of learning receives much less attention. In the study of the latter aspect a measure of 'attitude' is often found useful. This article, therefore, describes an attempt to measure and state in quantitative form the attitude of children towards certain subjects in the school curriculum, by an adaptation of the psycho-physical methods used by Thurstone and Chave.¹ The results seem to suggest that the experimental educationist may find it a valuable means for estimating the validity of different teaching methods, and the relative merit of various school subjects, from the point of view of their effect on the attitude of the pupils.

The investigation was carried out by the writer in a selective central school in North London, with the full co-operation of the head master and the rest of the staff. Questionnaires giving comparable data in

* Based upon a thesis accepted as part qualification for the degree of M.A. in Education at London University (Institute of Education), 1937.

¹ See *The Measurement of Attitude.* (University of Chicago Press, 1929.)

French, mathematics, history, English, and geography were filled up by 231 boys with ages ranging from eleven to fifteen, grouped in eight different forms. In all, some 1,200 questionnaires were answered as a basis for the assessment of attitude scores, and the replies to over 60,000 questions tabulated to make possible the comparison of attitudes between age groups and different school subjects.

II.—METHOD.

(1) *Preliminary statements.*

In the early stages of the enquiry a number of senior pupils were asked to write down why they liked or disliked various school subjects. The results were useful as a guide in drawing up questionnaires for use in a preliminary experiment, and a few examples are given below:

"I like commerce as most of it is common sense, and it also gives me an idea of buying and selling and also of the commercial state of affairs, and it also gives me wider ideas of the world."

"I like chemistry as it is a study of the laws of nature and is also rather interesting."

"I like arithmetic and geometry because they are interesting and are of some use to me after I leave school; the arithmetic for office, and geometry for draughtsmanship, but I fail to see where algebra and trigonometry can help you, except in special cases."

"I like geography because there is not much homework and because there are many maps and diagrams to draw. I dislike geography because it is only a matter of facts and is not very interesting."

While such statements as these do give a general indication of attitude they cannot provide a satisfactory basis for expressing the difference between the attitude of any given pupil to various subjects, or for comparing the attitude of various pupils to the same subject. For comparisons of this nature it is necessary to use a more precise method of expressing attitudes, sufficiently wide in its scope to cover extremes of attitude and giving results which can be accurately graded by reference to some reasonably objective standard. To secure this greater measure of precision, statements about school subjects must be presented to the pupils for affirmation or rejection. If a satisfactory questionnaire can be drawn up to cover as many shades of opinion as possible, then the affirmations of the pupils provide data which is directly comparable between different pupils and different groups.

(2) *The preparation of the questionnaires.*

In preparing the questionnaires two main facts must be kept in mind: first, that the questionnaires are to be answered by children; second, that only complete acceptance or rejection of any statement can

be expressed. For these reasons the statements used must be unambiguous, easy to understand, and indicate a clear and decisive attitude towards a specific issue. They must also be short, clear cut, and direct.¹

In this investigation a preliminary experiment was found useful for eliminating certain unsuitable statements, in particular those which described the performance of any act which might be undertaken from widely differing motives.

Here is the final form of the French questionnaire (with the addition of the scale values which are explained in the next section) (3). The statements were presented in random order, twenty-four identical statements appeared in each subject questionnaire, and as far as possible uniformity was obtained throughout so as to make the results in different subjects comparable.

ATTITUDE QUESTIONNAIRE.

SUBJECT: FRENCH.

Instructions.—Below are a number of statements about the subject of French. We want to know what you feel about this subject. Please read the statements carefully and then :

- (1) Put a tick () if you *fully agree* with a statement.
- (2) Put a cross () if you do not fully agree with a statement.

1.—I think that everyone should be taught French.....	10.7
2.—I think that French will be of some use to me after I leave school	7.7
3.—I think that French is very dull	1.3
4.—I think that French is the most interesting subject that we have in school	10.7
5.—I think that a lot more school time should be given to French..	10.2
6.—I should never do any French if I were not compelled to.....	.6
7.—I think that boys only read French books because they have to for school purposes.....	4.0
8.—If I were given the choice of a book I should choose a French book	10.3
9.—I think that boys should only learn to read French not to speak it.....	6.2
10.—I am only pleased when the French lesson comes if it follows a lesson that I dislike very much	7.0
11.—I have no desire to read French newspapers.....	2.5
12.—I like to listen to French talks on the wireless, because I think it will improve my knowledge of the language.....	9.5
13.—I think that learning French grammar is essential for a good knowledge of the language	6.2
14.—It is very interesting to try to turn a piece of French prose into good English	8.8
15.—I think that spoken French is more pleasant to listen to than English	8.0

¹ Cf. C. K. A. WANG : *Suggested Criteria for Writing Attitude Statements.* —J. Soc. Psych., August, 1932, pp 367-373.

-I should like to obtain a position in which I can use French when I leave school	8.1
-I have no desire at all to learn to speak French.....	.7
-I try to do something every day to improve my French vocabulary	8.7
-I think that it takes so long to learn a foreign language that the attempt is not worth while	2.0
-Translating English into French is so tedious that I dislike it very much	1.7
-I think that French should only be taught to children who want to learn it.....	3.6
-I think that French will be very useful to me after I leave school.....	8.7
-I find some parts of my work in French interesting.....	7.7
-I often borrow French books from the school or public library..	10.0
-I think that French is the least interesting subject that we have in school .....	.7
-I think that far too much time is given to French in school....	1.7
-Occasionally I do some French in my optional periods because I find it fairly interesting.....	7.2
-I think that many boys want to read French books because they enjoy doing so.....	9.0
-I am always pleased when the French lesson comes.....	9.9
-I occasionally listen to French talks on the wireless but am not very interested in them.....	5.8
-I should like to be able to read French well so that I could read French newspapers	9.0
-I often talk about French with my friends because I am interested in it	8.5
-I find that translating French into English is rather tedious and uninteresting.....	3.2
-I think that French is a language that has many unpleasant sounds	3.0
-I should like to obtain a position as French interpreter when I leave school	10.2
-I only want to learn to speak French just well enough to be understood	7.4
-I think that French is very interesting.....	10.0
-I would like to stop French from being taught in schools.....	.5
-I only borrow French books occasionally from the school or public library	7.6
-I would like to spend a little more time in school on French....	7.8
-I like French so much that I often do some in my optional periods	10.4
-I think that some boys read French books because they like them	6.4
-I think that boys should learn both to read and to speak French	9.3
-I think that learning French grammar is very uninteresting....	8.0
-I should like less homework in other subjects and more in French	9.4
-I enjoy trying to translate English into French.....	10.0
-I think that the work of learning French is more than repaid when one can read and speak the language.....	8.6

48.—I intend to work hard at French until I can speak the language fluently	9.6
49.—When I leave school I shall give up the study of French entirely because I am not interested in it .....	.7
50.—I think that learning French grammar is so dull that it should be avoided whenever possible.....	1.8

(3) *The attitude scale.*

Given a selection of suitable statements the next step is to get them spread out in the order of the attitude they express, and to allocate to each of them a scale value. (See Appendix, Note 1.) The fifty statements of the French questionnaire were each typewritten on a separate card, and ten teachers requested to sort them into eleven piles ranging progressively from very favourable to very unfavourable attitudes. Precise instructions were given as to the procedure to be followed.

The results of the sorting of the judges were tabulated and a table of accumulative proportions prepared. An example will make clear what this means. In the case of Statement 23, which reads : "I find some parts of my work in French interesting," one of the sorters placed the statement in pile F, two placed it in pile G, three in pile H, and four in pile I. Expressing these proportions as percentages, and adding them to make them accumulative, we get the following place in the table :

	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	
Statement 23.	1	2	3	4	5	6	7	8	9	10	11	(Attitude Scale.)
	.00	.00	.00	.00	.00	·1	·3	·6	1.00	—	—	(Accumulative proportions.)

The scale value of the statement is then determined graphically.¹ The basis of the scale is the combined judgment of the sorters, who were requested not to allow their own attitude to prejudice their judgment of the position of the statements in the objective scale. An investigation by E. D. Hinckley² has shown "that the attitudes of the judges have no serious effect on the measuring function of the scales."³ (See Appendix, Note 2.)

¹ The attitude scale is plotted along the horizontal axis, and the accumulative proportions along the vertical axis. The point at which the graph curve of accumulative proportions crosses the 50 per cent level gives the scale value of the statement on the attitude scale.

² HINCKLEY, E. D.: *A Scale for Measuring Attitude Towards the Negro.*—University of Chicago Press, 1930.

³ THURSTONE, L. L.: *The Measurement of Social Attitude.*—*Journal of Abn. and Social Psychology*, October–December, 1931, Vol. 26, pp. 249–269.

After determining the scale value of each statement, and rejecting those found to be unsuitable, the questionnaire is ready for submission to the pupils. The attitude score of any individual is the mean scale value of all statements which he answers in the affirmative.

In the process of completing the questionnaires every effort was made to secure constant conditions, so that valid comparisons of the attitudes of different groups could be made. In every case the questionnaires were presented to the group by the investigator, none of the work being delegated to others.

As a check on the reliability of the questionnaire a group of thirty-six pupils was given the French questionnaire to complete on two successive days. When the separate results were correlated the coefficient obtained was +0.93 (+0.105).

III.—RESULTS.

(1) General results.

For each of the five subjects included in the investigation a statistical summary was prepared,¹ giving the number of affirmative answers to each of the statements, and a series of graphs showing the range of attitude in each of the eight forms by whom questionnaires were answered.

Table I shows the mean attitude scores, the higher the score the more favourable is the attitude indicated. (See also Appendix, Note 3.)

TABLE I.
MEAN ATTITUDE SCORES FOR SUBJECTS AND FORMS.

(The higher the score the more favourable the attitude.)

<i>Form.</i>	<i>French.</i>	<i>English.</i>	<i>History.</i>	<i>Mathematics.</i>	<i>Geography.</i>
1R ..	6.69	6.93	7.79	6.83	7.02
1A ..	7.24	7.06	6.94	6.92	6.66
1B ..	6.13	7.40	6.62	6.72	6.94
2A ..	5.44	6.61	6.39	5.36	6.89
2B ..	5.08	6.72	6.43	6.39	6.39
3A ..	6.36	7.30	6.04	6.78	6.64
3C ..	3.97	6.63	6.03	6.50	5.87
3N ..	—	6.70	4.90	6.73	6.66
Mean..	5.85	6.92	6.39	6.53	6.69

¹ The statistical summaries are available at the London University Library in the thesis by the present writer: *The Attitude of Children Towards School Subjects*.

(2) *Attitude to French.*

In this subject the following tendencies were clearly revealed:

(1) *Attitude towards French is most favourable during the first year, and declines afterwards.*

Valid comparisons were possible because the classes compared were taught by the same subject master, and, therefore, differences arising from different teaching methods did not confuse the issue. Apparently the difficulties inherent in the early stages of learning a foreign language, and the sense of weariness which might arise from the comparatively large amount of memorizing which has to be done, are more than offset by the thrill of venturing into new fields of knowledge.

(2) *Attitude towards French tends to vary in accordance with the general standard of academic attainment*, the brightest forms have the most positive attitude. In none of the other subjects is this relationship so clearly marked.

(3) *The extremely unfavourable attitude of Form 3C*, which was the dullest of the third-year forms. The mean attitude score for French is 3·97. More than 60 per cent have an attitude score below 4·00. This should be compared with their mean score in other subjects: English, 6·63; History, 6·03; Mathematics, 6·50; and Geography, 5·87. The comparison is very striking because this form had the same master for French, English, and History. It appears therefore that the low attitude score for French is most probably due to a dislike for the subject, rather than to prejudice against a particular master or to objection to a particular teaching method.

It seems that a strong case could have been made out for discontinuing French with this form except in the case of two or three pupils, and devoting the time to more acceptable subjects. This conclusion is borne out by the results obtained from an identical series of questionnaires presented some six months later. The mean obtained from the same group in the subject of French was 3·11, lower still than the original result.

No marked liking for French is shown by any form. Many pupils consider it is very dull, and only in the first-year forms is it considered interesting. If a favourable attitude is not aroused by interest in the subject, it might be induced by belief in its utilitarian character. R. A. Pritchard in his study of secondary school pupils,¹ says that "Amongst boys the utilitarian reason comes first and it is vocational more than

¹ PRITCHARD, R. A.: *The Relative Popularity of Secondary School Subjects at Various Ages*.—This Journal, June, 1935, Vol. 5, Part II, pp. 157-179.

useful for travel." The results of the present investigation do not give evidence of any strong belief among central school pupils in the utilitarian nature of the subject ; a large proportion of the pupils think that French should be optional, and about half will be satisfied with having a nodding acquaintance with the language.

The dullness of French grammar is a very common complaint, although it is generally recognized as being essential to sound knowledge. Many second and third-year pupils consider that the language takes so long to learn that the attempt is not worth while, but the number holding this view is considerably less in the first-year forms. This waning of interest is further illustrated by other answers which show that the number of boys who, consciously endeavour to add daily to their vocabulary declines from 47 per cent in the first year to 29 per cent in the second year, and 17 per cent in the third year.

I would suggest that the teacher of French needs to bear four things in mind if a favourable attitude is to be maintained among the pupils :

- (1) Constant encouragement and an interesting teaching method is necessary.
- (2) Emphasis must be placed upon the usefulness of the language in after-life.
- (3) Pupils need to *use* the language as far as possible, even in the early stages, so as to offset the feeling that learning it is such a long process.
- (4) If interest declines the attempt to make a daily effort to increase vocabulary will cease to be made.

(3) *Attitude to mathematics.*

In mathematics the attitude scores show a remarkable level of consistency, although they are slightly higher in the first than in subsequent years. The general level of academic attainment is not reflected in the general level of attitude scores, as it was in French.

Utility rather than interest appears to be the dominant factor in producing a favourable attitude. Very few boys consider it the best subject, while more than a quarter think it the "least interesting," and a still greater number find it "very dull." Optional work in mathematics only attracts a small proportion, and there seems little general desire to obtain a position in which mathematics would be consistently used. Interest in mathematical studies as such appears to be confined to a very small number. On the other hand, there is a widespread recognition of the usefulness of mathematics, for over half the pupils consider it the most useful of all school subjects, especially from the point of view of their

possible future occupation. 85 per cent realize the great importance of mathematics in its application to other scientific and commercial subjects, and a similar number appreciate the usefulness of mathematical labour-saving devices in scientific work.

Some light is shed on the influence of the utilitarian point of view in determining whether pupils consider a subject should be universally taught. In this case, although an average of less than 25 per cent of the pupils appear to be really interested in mathematics, 86 per cent consider that everyone should be taught the subject in school. The conviction that a subject is useful also seems to provide a sufficient motivating force to produce steady work, for 57 per cent of the pupils express their intention of working hard at the subject until they are very proficient, and of doing something every day to improve their knowledge.

It would seem, therefore, that a maximum amount of work will be obtained from the pupils by stressing the usefulness of the various sections of the subject. Boys of the type found in selective central schools are usually very conscious of the economic difficulties in their homes, and are anxious to equip themselves for playing their part in the economic struggle. Hence the great stress they place upon the utility factor in mathematics. If the teaching method adopted can also induce an *interest* in the subject as well as in its uses, then a much more favourable attitude will probably result.

(4) *Attitude towards history.*

In history two outstanding facts are revealed :

(1) The homogeneous character of the attitude towards history in the first forms.

(2) The decline in favourableness of attitude with increasing age.

The average attitude scores for the first forms are 7.79; 6.94; 6.62; for the second forms, 6.39; 6.43; and for the third forms, 6.04; 6.03; 4.90. Two masters shared the work in history with these forms, each of them taking at least one form in each age group, and the results are similar in trend, although different in degree, in both cases. It would be extremely interesting to see if the downward trend continued in the following year. Another year of development, which at this age can lead to such radical changes in attitude and personality, might reverse the trend by introducing new and wider conceptions of the utility and importance of the subject.

The tabulated results are interesting because they make possible detailed comparisons between the attitude of different age groups. Two-thirds of the first-year pupils find history very interesting, but

less than one-third of the third-year pupils share this view. A similar number in each case is always pleased when the history lesson comes.

On the whole, there seems to be a marked appreciation of the value of the history course from a civic point of view, which is not radically affected by difference in age. A similar proportion of the pupils (82 per cent) gave affirmative answers to the following three statements : "I think that a study of the past can help us to avoid mistakes in the future"; "I think that every working man should know how the present industrial system developed"; "I think that the study of history can help us to understand what is happening in the world to-day." Fifty-one per cent stated that they liked to learn history because they thought it would help them to vote intelligently at elections.

These large proportions are interesting compared with the small proportion (18 per cent) who consider that history will be very useful to them after they leave school. In estimating the "usefulness" of a subject the pupils appear to judge largely by vocational standards. The major question they ask is : "Will this subject be useful to me in my future work?" and the answer decides whether or not they consider the subject will be very useful to them after they leave school.

R. A. Pritchard (*op. cit.*) found that after the age of 13½ the focus point of interest in history is social rather than political, and that delight is taken in comparing present with past customs. The present study bears out his conclusions—58 per cent of the pupils considered that "it is very interesting to read about the customs and manners of people of past centuries," 74 per cent think that the historical exhibits in museums are very interesting; and 60 per cent say that whenever they have the opportunity they visit places of historical interest. There is encouraging evidence here for history masters who desire to use museums and illustrations to remove the purely academic bias from the history course and to invest it with some measure of reality. Eighty-one per cent consider that "books of historical illustrations are very interesting because they help to make history real"—a proportion which helps to justify the modern tendency to increase the available illustrative material, particularly of a contemporary character.

The decline in interest with increasing age presents a challenge to the history specialist as well as to the French specialist. The solution in the case of history seems to lie along three main lines :

- (1) Emphasis upon social life and conditions rather than purely political changes.
- (2) A greater use of illustrative material and more frequent museum visits.

- (3) More opportunity for active work in connection with the subject ; such as the compilation of files of illustrative material and some elementary research upon chosen topics.

Readers will probably be interested to know that in the school in which this investigation was conducted, the history syllabus and method of work was considerably changed along the lines suggested above. The result more than justified the change, and the illustrated note books of the pupils gave ample evidence of a revived and sustained interest.

(5) *Attitude towards English.*

The most significant feature revealed is the consistently high average score for all the forms concerned. The lowest average score for any single form is 6.61, compared with 3.97 for French, 4.90 for history, 5.36 for mathematics, and 5.87 for geography. There appears to be very little relation between attitude towards English and the general standard of academic attainment, indeed in both the first and second-year forms the average attitude scores vary inversely to the general academic standard.

A good deal of information was obtained which should prove of interest to teachers of English. Poetry seems to enjoy little popularity, except among the younger boys. Essay writing is viewed in a similar light, although in this case the upper forms are most favourably inclined. Nearly half the pupils dislike writing essays very much, against one-third who find it interesting. Apparently more active forms of self-expression are more favourably regarded, for 63 per cent enjoy taking part in class speeches and debates and 67 per cent enjoy reading plays very much. This may also reflect the general feeling that it is an advantage to be able to speak good English. More than 50 per cent of the pupils think that people do not wish to read Shakespeare's plays after they leave school, but the proportion is probably not as large as might be popularly supposed.

Over half the pupils state that the books provided for the literature lessons are rarely interesting, the proportion remaining fairly constant throughout the school. Interest in increasing the range of one's vocabulary is much greater in the first year than in either of the other two years.

Practically all the pupils say they regard a knowledge of grammar as essential to a good knowledge of English, although nearly half of them consider it uninteresting. This may, however, be merely a reflection of the point of view of the teacher, or be mainly attributable to the suggestion

contained in the form of the statement. Seventy-four per cent say they work hard at English, because it is necessary to be able to express one's ideas clearly, and 30 per cent do not intend to do more than is necessary because they think a knowledge of English is only needed for letter writing or for conversational purposes. Parents with no literary interests may be responsible for this attitude.

In conversation with the Senior English Master a number of interesting facts were elucidated. For example, the class in which the highest number of pupils liked reading plays very much had been reading a series of "Modern One-Act Plays" which were not available for the other classes. Similarly, the high percentage of first-form boys who find the English literature books uninteresting is largely due to the use of a book which the master deemed unsuitable, and which was shortly to be changed. Verification of this kind gives encouragement to the view that questionnaires of this type have a practical value in school work.

From the point of view of the class teacher the following outstanding facts are revealed :

- (1) The comparative unpopularity of poetry and essay writing.
- (2) The unfavourable judgment passed on books provided for the literature lesson.
- (3) The interest evoked by the more active forms of oral expression such as class debates and speeches.

We are only now giving tardy recognition to the fact that adequate oral expression is the basis of all written work. Facility to think and to clothe one's thoughts with words is best and most economically learned by some form of oral work, and can thus become one of the means of activity which most children seem to desire.

(6) Attitude towards geography.

A uniformly high attitude score was obtained in geography, which evidently evokes a considerable amount of interest. Nearly half the pupils consider that the subject is very interesting ; 71 per cent think that everyone should be taught geography, 42 per cent are always pleased when the geography lesson comes, while only 9 per cent think that the subject is very dull.

In geography, as in most other subjects, there is a strong preference for any form of practical work of an illustrative nature. Mapping is extremely popular, and a large majority would like to devote more time to it. The interest shown in books of illustrations and the acute dislike of note writing, which were revealed by the history questionnaire,

are similarly marked in this subject. Ninety per cent of the pupils find books of geographical illustrations very interesting, and 37 per cent are hopelessly bored whenever they have geography notes to write; in the latter case the proportion increases with increasing age. Those who favour the introduction of the cinema into the schools will be interested to know that out of 231 boys as many as 220 find travel films interesting.

IV.—THE MEASURE OF CORRELATION BETWEEN ATTITUDE AND ATTAINMENT.

Previous attempts¹ to measure the correlation between interest and ability in educational work have yielded conflicting data and conclusions. In most of these experiments "interest" has been evaluated subjectively by the comparison of school subjects and the use of a self-rating scale. Nemoitin² used extremes of liking or disliking as the standard by which interest should be measured, but the results obtained in the present investigation show that conceptions of future utility may exercise a powerful influence upon the *attitude* of a pupil to a school subject and yet not influence to any large extent his estimate of his *interest*. The substitution of a more objective measure of attitude appears therefore to overcome some of the practical difficulties which have hampered earlier work. Instead of measuring "interest," which has been evaluated subjectively, we use an objectively constructed attitude scale to which tests of validity can be applied, and which is capable of further refinement in the light of experiment and experience.

In the present investigation the correlation between attitude and attainment has been worked out for each form, each pupil being assigned a rank order attitude score and an attainment rank order score based upon the percentage of marks received in the terminal class list. The attitude questionnaires were completed a few weeks before the terminal examination, and the final class position of each pupil was determined

¹ HARTMAN, ROSS, and DASHIEL, J. F.: *An Experiment to Determine the Relation of Interest to Abilities*.—*Psych. Bulletin*, August, 1919, Vol. 16, pp. 259-262.

BRIDGES, JAMES W., and DOLLINGER, V. M.: *The Correlation between Interests and Abilities in College Courses*.—*Psych. Review*, July, 1920, Vol. 27, p. 309.

FAYER, D.: *Predicting Abilities from Interests*.—*Journal of Applied Psych.*, 1927, Vol. II, pp. 212-225.

THORNDIKE, E. L.: *The Correlation between Interests and Abilities in College Courses*.—*Psych. Review*, September, 1921, Vol. 28, pp. 374-376.

FAYER, D.: *Interest and Ability in Educational Guidance*.—*Journal of Ed. Research*, June, 1927, Vol. 16, pp. 27-39.

² NEMOITIN, B. D.: *Relation between Interest and Achievement*.—*Journal of Applied Psych.*, 1932, Vol. 16, pp. 59-73.

by a composite mark based upon his examination result and his work during the term, equal weight being given to each factor.

The form was taken as the unit for correlation purposes rather than the year group for two reasons. Firstly, in some cases different forms in the same age group were being taught the same subject by different masters, therefore having different examination papers which would not yield strictly comparable results. Secondly, each form has its characteristic "atmosphere" which finds some reflection in the attitude of every pupil in it, whilst the reaction of pupils to the personality and teaching methods of any subject master is inextricably linked to their attitude to the subject itself. In choosing the form group as the basis for judging the measure of correlation between attitude and attainment we are therefore taking the unit in which the external conditions are most constant.

Table II shows the correlation coefficients obtained for attitude and attainment in the present case by the use of Spearman's Rank Order Method.

TABLE II.

THE MEASURE OF CORRELATION BETWEEN ATTITUDE AND ATTAINMENT IN CERTAIN SCHOOL SUBJECTS.

<i>Forms.</i>	1R.	1A.	1B.	2A.	2B.	3A.	3C.	3N.	<i>Mean.</i>
French	-.04	+.18	+.15	+.29	+.34	+.47	+.40	—	+.26
Maths.	+.12	+.23	+.35	+.27	+.39	+.46	+.33	+.50	+.33
English	-.08	+.05	+.33	+.23	+.27	+.31	+.40	+.51	+.25
History ..	+.03	+.28	+.28	+.35	—.02	+.35	+.18	+.26	+.21
Geography ..	+.42	+.29	+.38	+.24	+.11	—.01	+.08	+.18	+.21
Mean	+.11	+.21	+.29	+.28	+.22	+.32	+.27	+.29	+.25
Significance of Co-efficient.									
$\sigma = \frac{1}{2} r$	+.502	+.389	+.389	+.414	+.414	+.414	+.502	+.441	—
$\sigma = \frac{1}{2} r$	+.382	+.281	+.281	+.303	+.303	+.303	+.382	+.326	—

V.—SUMMARY OF RESULTS AND CONCLUSIONS.

(1) *French.*

The most favourable attitude is found in the first year, but it declines with advancing age. Attitude varies with the general standard of academic attainment, being the most positive in the brightest forms. Little interest is shown in the subject and few pupils believe it to be

very useful. The primary necessity is for a more direct and interesting teaching method, and emphasis upon the many ways, both cultural and commercial, in which the subject may be used.

(2) *Mathematics.*

A remarkably consistent attitude is revealed, and is affected very little by differences in age or academic attainment. Utility rather than interest is the dominant factor. Practical applications should therefore be stressed.

(3) *History.*

A very favourable attitude is created among first-year pupils by their interest in the subject. In higher forms interest declines and attitude becomes less favourable. The subject is not considered useful, since most pupils think of usefulness in terms of their future occupations. Visits to museums and practical illustrative work are appreciated. A change of syllabus with greater emphasis upon social history and more scope for individual illustrative work was found to sustain interest and foster a positive attitude among the older pupils.

(4) *English.*

A consistently high average attitude score was found in all forms, and was unaffected by differences in academic ability. Poetry and essay writing are not popular, but active forms of oral expression are welcomed. Unsuitable text-books help to cause an unfavourable attitude to the subject. A new approach to original composition is needed and more scope should be given for dramatic work, speeches, and debates.

(5) *Geography.*

This subject appears to interest pupils in all age groups. Illustrative material and practical work such as mapping, are appreciated; note-taking is abhorred, but travel films are popular.

(6) *The correlation between attitude and attainment* was about +.25, the highest correlation being in mathematics. The figures give some evidence that a positive relation exists between attitude and attainment, but in few cases is it of outstanding significance. Attitude is a factor helping to determine relative attainment, and attainment affects attitude, but each is the resultant of a large number of contributory causes. The correlation coefficients are therefore positive, but not high.

(7) *The value of attitude measurement.*

The establishment of the validity of attitude measurements in school subjects is important from two main points of view. Firstly, it will yield a new criterion by which the relative success of different teaching methods may be judged; secondly, it will aid us considerably in our attempt to provide individual treatment based upon definite data.

The opinion appears to be growing that the success of a teaching method should be judged by the attitude evoked as much as by the extent of the knowledge acquired. Unfortunately, the influence of that opinion upon pedagogic practice has been limited, probably because the subjective element in estimates of attitude made difficult the accurate measurement of attitude, while attainment seemed susceptible of objective measurement and expression. We may, however, confidently expect that in the near future greater importance will be placed upon the creation of favourable attitudes than upon the mere giving of information. Two factors are calculated to bring this about : first, the weakening of the belief in the purely objective nature of school examinations ; second, the continuous development of psycho-physical methods of attitude measurement and their application to educational work.

Attitude measurement in educational work may prove of great value if linked up with some attempt at case study as an integral part of a systematic and comprehensive record of the child's school career. At the present time school records are almost entirely confined to the percentage of marks gained for different subjects at terminal examinations, with possibly the addition of a note upon any outstanding physical defects revealed by the medical examination. Psychological defect and mental maladjustment is all too frequently undiscovered unless it results in active anti-social behaviour, yet it is highly probable that a considerable number of pupils in school whose behaviour is not definitely anti-social have problems which need to be revealed and frankly faced if the child's development is to continue unhampered.

Unfortunately, it was not possible to analyse the present results to discover what light they shed upon individual maladjustment and how far sympathetic treatment and frank discussion might ease the situation. It is hoped that a more exhaustive investigation into the possibility of using attitude questionnaires as a basis for individual guidance may be made at a later date.

VI.—APPENDIX.

Note 1 : The attitude scale.

An adequate description of the theory of attitude measurement can be found in the work of Thurstone and Chave.

The primary conception in this method of measuring attitudes is that of a "specified or implied continuum along which the measurement is to take place." We are quite familiar with the description of individuals as being more or less favourably disposed towards a certain subject in the curriculum. A pupil is said to like French better than mathematics, or to be more favourably disposed towards French than another pupil. The

problem is to determine and express how much more he likes French than the other pupil does. In all our measures of scholastic achievement "it is necessary to force the qualitative variations into a scholastic linear of some kind." Similarly we may conceive of the attitudes of pupils towards school subjects varying from extremes of favour to extremes of disfavour, and approximating to some point on a linear continuum constructed to represent these variations.

Note 2 : A measure of ambiguity.

Where the judges do differ widely in their interpretation of the attitude indicated by any statement the graph line will spread over a number of class intervals. The spread between the two quartile points at which the curve intersects the 25 per cent and the 75 per cent horizontal lines can therefore be taken as a measure of ambiguity, here called the "Q" value. If the "Q" value of any statement is large that statement must be rejected from the final scale.

In Thurstone and Chave's experiment, to which reference has already been made, the average "Q" value for forty-five statements was 1.67; in the present investigation the average "Q" value for the fifty statements of the French questionnaire was 1.6, which compares very favourably with Thurstone's. Droba, in his Scale of Militarism-Pacifism, gets an equivalent "Q" value of 1.76 for forty-four statements.¹

Note 3 : Root-Mean-Square deviation of frequency distributions.

<i>Form.</i>	<i>French.</i>	<i>English.</i>	<i>History</i>	<i>Mathematics</i>	<i>Geography.</i>
1R ..	2.322	1.256	0.899	1.553	1.41
1A ..	1.277	1.037	0.761	1.237	1.098
1B ..	1.761	1.245	1.131	1.071	1.594
2A ..	2.198	1.349	1.197	1.601	1.137
2B ..	1.459	1.533	1.2	1.523	1.541
3A ..	1.004	0.95	1.227	1.523	1.018
3C ..	1.5	0.985	1.186	1.213	1.223
3N ..	—	1.045	1.781	1.185	1.067

The table above shows the Root-Mean-Square deviation of the graphs of frequency distributions referred to in Section III, under the heading of General Results. The deviation is a statistical measure of the spread of the graphs of attitude, the higher the deviation the greater is the spread of attitude within the particular form.

¹ DROBA, D. D.: *A Scale of Militarism-Pacifism.—Journal of Educ. Psych.*, January, 1931, Vol. 22, pp. 98-111.

THE FACTORS OF THE MIND.

By CYRIL BURT. (University of London Press, 1940, pp. xiv + 509.
21s. net.)

I HAVE already written a review of this excellent book for another journal, and do not in general approve of more than one review from the same pen ; but the editor in reply to my protest has pleaded the exigencies of the times, and as one of his editorial colleagues I obey. Readers must just make allowance for 'halo effect' ; for, having praised the book on a first reading, I find myself wishing to praise it still more on a second, though there are, of course, some matters which I would have put otherwise, even some few places where I flatly disagree.

In successive parts the book discusses the logical and metaphysical status of factors ; the relations between different methods of factor-analysis (with which Burt classes the analysis of variance) ; the distribution of temperamental types ; and, in two appendices which will be very useful to students, the arithmetical procedures which Burt has devised, or modified from others. In his first part Burt urges that we should think of factor-analysis as a logical rather than as a mathematical method. Logically, he considers, factors are principles of classification. This attitude is, I think, a natural result of the pioneer work which Burt has done in applying factor-analysis to *persons* as well as to *tests*. When one analyses persons and discovers, or invents, factors among them to explain their correlations, it is natural to think of the factor as an imaginary person, to be exactly like whom would be to have complete saturation with that factor. And the persons with high saturation in that factor are most readily thought of as a class approximating to the pure type.

I do not myself find, as Burt thinks a majority in this country would find, the philosophical approach to factor-analysis easier or more illuminating than the geometrical. And in these early chapters of *The Factors of the Mind* there is an atmosphere of scholasticism, of *baroco* and *baralipton*, and 'the more familiar Porphyry,' which savours of the crypt rather than of the greensward. But it takes all sorts to make a world, and those who prefer that sort of thing will find here dialectic and learning exactly, I imagine, to their liking.

With Burt's conclusions as to the metaphysical status of mental factors, arrived at by paths unsympathetic to me though they be, I find myself, however, in complete agreement. How far, he asks, are we justified in attributing a concrete reality and a causal efficacy to the

factors we deduce? And he confesses himself in close sympathy with those of us who have warned the factorist against the temptation to 'reify and deify his factors.' But he proceeds—and I still follow him willingly and naturally—to point out that this temptation is not peculiar to psychology, nor the warning needed in that science alone. This leads on to what is one of the most interesting parts of his book, his comparison of the methods of factor analysis with those of quantum theory in physics. The theory of groups, which has found an application in the latter province of research, is a study which deals with structure only and does not ask who the actors may be or what their actions, but only about "the structure or pattern contained in the actions." Similarly, Burt does not think that a knowledge can be attained of factors either as physiological entities or as causal forces, but only of the relationship or structure which exists between unknown and unknowable components. "The search for primary abilities, defined in purely mathematical terms—the non-negative factors of Thurstone, or the non-fractional factors of Stephenson—seems to me," Burt says, "entirely illusory, if defined as the final goal of factor-analysis." We should be "quite content to say that a mental factor merely specifies a system of relations." In Burt's view "the special value of a factor in psychology is that it enables us to hold together in thought a definite but complex pattern of characteristics" (p. 237).

In Part III, dealing with the distribution of temperamental types, Burt adds to his work on the analysis of correlations between *persons*—and in passing he makes out, by the way, a very good case for the thesis that correlations between persons, and their classification into types, form the best introduction to factor-analysis for the student. Burt's chief contribution to this side of the study of factor-analysis has been his enunciation of the principle of reciprocity between person-analyses and test-analyses. This reciprocity had been seen by others. But in some cases they had only a vague idea of it. In my own case I saw it some years ago, but after some private discussion and correspondence with A. C. Aitken and with Hotelling I carried the idea no further, being discouraged by the difficulty about units, and by the fact that the matrices of covariances are in one or other of the two cases no longer "non-singular," if the general reader will pardon a technical term understandable only to some. But Burt boldly disregarded these difficulties and showed very strikingly that, in a certain special case, the factors and saturations arrived at by analysing tests are, when the proper units are chosen, identical with the saturations and factors arrived at by analysing persons, the saturations of either analysis corresponding to the factor values of the

other, and it being understood that the factors are the unrotated principal components associated with Hotelling's name.

This special case is that of a selected body of persons all equal in their total scores on a given battery of tests, which tests in their turn are all equal in the total scores they elicit from that body of people. At the Reading Conference on Factor-Analysis in the spring of 1939, during my summing-up, Burt from his seat claimed that the reciprocity, although present in its exact form only in this special case, would be approximated to in other cases, and I promptly agreed that this would be so. He has now put this to the test of experiment and confirmed the fact, at any rate in the group of twelve persons reported on in his new book. They were, it is true, a selected group, not however selected to fit the above requirements, but only because the temperamental assessments made by various judges on these twelve women students entering a certain training college were more unanimous than in the case of the other students entering. It may be expected, therefore, that each of these twelve was a well-marked temperamental type. They were assessed (by at least two judges each) for the eleven traits sociability, sex, assertiveness, joy, anger, curiosity, fear, sorrow, tenderness, disgust, and submissiveness. The assessments over each trait were standardized (Table I, page 389), that is to say, were measured in such units and from such an origin that their sum was zero, and the sum of their squares twelve, the number of persons. This, of course, fulfils artificially one of the requirements mentioned above, for the group as a group is thus made equal in an average of sociability, sex, assertiveness, etc. The correlations between the traits are then calculated (Table IV, page 403), and centroid factors, the first two of which I shall call u and v , are taken out, so that we have the eleven saturation coefficients of the traits in each of these factors u and v .

These two factors u and v are factors *possessed* in some amount or other by each of the twelve persons, and *required* in degrees indicated by the above saturation coefficients by each of the eleven traits. These saturation coefficients have been attained by an analysis of the correlations between the traits.

Now according to the reciprocity principle, if we analyse instead the correlations between the persons, and find factors which we may indicate by the Greek letters α , β , γ , and if we measure then the amount of these (Greek) factors *possessed* by the eleven traits, these amounts ought to be the same as the saturation coefficients of the (Roman) factors u , v , w , etc., though we shall have to consider which Roman factor corresponds to which Greek factor.

At this point, instead of actually analysing the correlations between the persons (Table II, page 391), finding the saturation coefficients for each

The Factors of the Mind

person, and thence finding the amount* of each (Greek) factor possessed by each trait, Burt takes a short cut, utilizing the fact that a centroid factor (and he is using centroid factors) is merely an average. His example makes this fact very real and vivid. True, he rather speaks as though he had himself made this discovery (as perhaps he has). But it is, of course, implicit in the name centroid, and in Thurstone's equations in Ch. III of *The Vectors of Mind*; is pointed out by Kelley on pages 61-62 of *The Essential Traits of Mental Life*; and proved by a use of the pooling square in my *Factorial Analysis of Human Ability*, page 99. Still, no one has previously proceeded to put the fact to use, and I for one never realized it so fully as I did after reading Burt's pages 396 to 399.

Burt restandardizes therefore the assessments, by persons this time instead of by traits (Table III, page 398), and finds simply the total score on each trait. These total scores are then proportional to the amounts of a centroid (Greek) factor α possessed by the eleven traits, and the crucial test of the reciprocity hypothesis is to see whether these totals are similar to the saturations of one of the Roman factors.

Here are the figures (Burt's page 405):

	Saturations of the Roman Factors (Table IV).		α
	u .	v .	
Sociability .....	.671	.508	.587
Sex .....	.878	.213	.489
Assertiveness .....	.827	.483	.378
Joy .....	.951	.283	.297
Anger .....	.924	.241	.280
Curiosity .....	.780	-.268	.001
Fear .....	.998	-.159	-.089
Sorrow .....	.259	-.104	-.337
Tenderness .....	.564	-.687	-.447
Disgust .....	.830	-.490	-.489
Submissiveness .....	.412	-.685	-.525

* In factor-analysis of the Spearman or Thurstone type, in which there are large specific factors, the amounts of each factor possessed by a person (or a trait, in the reciprocal case) have to be estimated from his scores, and from the saturation coefficients of the traits in the factors, by means of regression equations. But in the kind of analysis which Burt is using, which in its pure form employs Hotelling's principal components as factors, there are no specific factors strictly so-called, and the amounts of each factor possessed by a person (or a trait) can be calculated direct. A table of saturation coefficients for principal components serves a double purpose (see my *Factorial Analysis of Human Ability*, p. 79, or Hotelling's well-known paper in the *Journal of Educational Psychology*, 1933). Read horizontally it gives the composition of each test in terms of factors. Read vertically, if we divide each column by the corresponding latent root, it gives the composition of each factor in terms of tests, and hence enables the amount of each person's factor to be calculated from his test scores. This double purpose of a matrix of Hotelling saturation coefficients is indeed very closely connected with Burt's reciprocity principle, and with his unit sub-matrices. Geometrically the whole business is a quality of n-dimensional spaces, and an example of the kind of reciprocity we know there between points and primes, most familiar to the student of elementary synthetic geometry in the instance of the Pascal and Brianchon theorems, where lines and points in the one theorem correspond to points and lines in the other.

Clearly the amounts of α do not correspond to the saturations of ν , nor should they, for in Table II a general factor has been already eliminated by the double standardization. The amounts of α do, however, agree reasonably well with the saturations of the second Roman factor ν , and confirm Burt's prediction that, even in this sample, and with factors which are not exactly principal components, the reciprocity principle would still hold, approximately.

The reader should note that while, as Burt has just shown, the second factor ν of his Table IV (the correlations between the traits) corresponds to the first factor α of his Table II (the correlations between the persons) in the sense that the saturations of the traits with ν agree approximately with the amounts of α possessed by the traits; yet the apparently reciprocal statement is not true. The second factor of Table II does not correspond to the first factor of Table IV, as the reader might excusably though erroneously expect to be the case; for, he might not unreasonably say, the one table gives the person-correlations and the other the trait-correlations, and the reciprocity principle ought to work both ways. To argue thus, however, is to overlook a fundamental difference between Tables II and IV. The latter is made direct from the raw scores by standardizing their rows. Its correlations between traits are what we ordinarily are accustomed to call correlations. They contain a general factor as well as the later bipolar factors. Table II on the other hand is not made direct from the raw scores but from a matrix of marks which have already been standardized by rows, before being standardized by columns in the process of calculating the person-correlations. The consequence is that in Table II the general factor has already been eliminated, and the correlations are not what we ordinarily call correlations. They contain only the bipolar factors; and the first of these corresponds to the first *bipolar* factor (but the second factor to be extracted) in the matrix of trait-correlations (Table IV).

To make a true reciprocal calculation to that which Burt gives would mean starting with the actual raw scores (which Burt does not give) and making two new tables of correlations from them. This time the table of person-correlations should be made direct from the raw scores by standardizing their columns, and would now contain a general factor; while the correlations between traits should be made from a matrix of marks twice standardized, first by columns, and then in addition by rows. Then the table of correlations between traits would contain only bipolar factors, and its first factor should correspond to the second factor of the table of person-correlations.

It would be very interesting if Burt would supplement this chapter by making this additional calculation. I fancy, however, that a difficulty might arise if, as is probable, the instructions to the judges who assessed the students were such that their assessments from the beginning tended to be standardized by rows as in Burt's Table I. Burt does, however, if I understand him rightly, tell us something about this reciprocal kind of calculation, in a footnote on pp. 424-5. There we learn that for a number of miscellaneous groups the factor-measurements for persons (obtained by correlating traits) and the saturation coefficients for persons (obtained by correlating persons) have been found to agree sufficiently well with each other.

From these same miscellaneous groups Burt has also calculated an average set of factor-measurements for traits, and gives these for comparison with the results of the special experiment with twelve women students described above (pp. 425 and 405). The resemblance is not bad, and gives support to Burt's idea of setting up a standard of comparison for the purpose of judging the type (extravert or introvert, for example) to which a given person belongs. With this aim he makes a ' Temperamental Psychogram,' with the eleven traits arranged in the order of their factor-measurements for the extravert-introvert factor, namely *

(1) Sociability .....	.55	(7) Tenderness	-.12
(2) Assertiveness ....	.51	(8) Sorrow	-.23
(3) Anger .....	.44	(9) Disgust	-.25
(4) Curiosity.....	.25	(10) Fear	-.39
(5) Sex .....	.19	(11) Submissiveness .	-.52
(6) Joy .....	.10		

These factor measurements are drawn as a standard graph, and with this each person is compared by drawing the graph of his assessments in these traits on the same sheet. These individual assessments ought, however, to have the ' general factor for persons ' eliminated by obtaining them as deviations about the average for the population in that trait. For rough quantitative judgment in the clinic Burt suggests merely *ranking* these eleven traits for the individual person, comparing this with the above standard ranking, and finding the sum of the differences in rank. Then the formula

$$\frac{\text{sum of rank differences}}{\text{unity} - \frac{30}{}}$$

gives a coefficient of extraversion which, he says, approximately eliminates the influence of the general factor (p. 426). Thus a person estimated to have these traits in the above standard order would have an extraversion coefficient of unity, while a person who possessed them in the reverse order of strength would, as the reader can calculate, have rank differences totalling 60, and a coefficient of extraversion of *minus* unity—perfect introversion.

It must never be forgotten, however, that all this work on bipolar factors is concerned only with the factors after the first general factor, both in the traits and in the persons. Two men may agree in the *order* in which these eleven traits are evident in their daily behaviour. They

* These factor-measurements are averaged from many experiments and differ therefore somewhat from those found above in the particular experiment with twelve women-students.

may both be more sociable, more assertive, more prone to anger than they are submissive or timid or tender. But the one may have strong, the other only weak emotions. They are both of the extravert type, but one is weak and one is strong. Their general factors differ ; and probably their classification by their fellow-men will, in fact, depend more on their general factors than on their pattern round about that general factor.

Neither my space nor my time permit me to write more about what is, I consider, a great book. Burt has now, in addition to very many articles and papers, given us three major volumes, on *The Young Delinquent*, on *The Backward Child*, and on *The Factors of the Mind*. He has in his possession, as the result of his years of work as psychologist to the London County Council, a mass of data which it is evident he is continually studying and re-analysing. He has read mathematical works which are not found easy by even professional mathematicians,* he is not afraid of calculation, and he has also not only read Aristotle and Mill and Keynes, as most of us perhaps have, but a host of other logicians, too ; yet his mental digestion seems still to be strong. As a result his books are meaty and solid, show glimpses of much work behind them, and open vistas of suggestion ahead. If psychology ever becomes a true science, Burt will have a strong claim to have done as much as anyone, and more than most, in aiding it to attain that goal.

GODFREY THOMSON.

* Isn't he a little optimistic when he says (p. 502) that the books in his list of references are mainly those easily intelligible to the English student ? I don't think English students, or even Scottish students for that matter, find MacDuffee's *Theory of Matrices*, or Wedderburn's *Lectures on Matrices*, or E. B. Wilson's papers, or a score more in the list, easily intelligible.

PREFACE TO AN EDUCATIONAL PHILOSOPHY.

By I. B. BERKSON. (New York : Columbia University Press ; London : Humphrey Milford. 16s. 6d. net.)

THE title of Dr. Berkson's book suggests a wider study than is indicated in his own declared intention, or is actually attempted in the book itself. He is attempting, he says, "to sketch out the contours of a social philosophy for American education." This is exactly what the book does. It has little to say about the philosophical foundations of educational theory in general. Without denying these more general implications it claims that the working philosophy of educational thought and practice must be a social philosophy. And it takes the United States and conditions in the United States as the scene of action.

An English reviewer, therefore, cannot but feel somewhat hesitant in offering comments on the book lest he should appear to be presuming to tell the Americans how to set about their own proper business. Nevertheless, the views which Dr. Berkson puts forward do have a more general relevance. He raises issues of principle that concern much more than the American scene. Also we, too, in England are more and more concerned about the philosophical justification of our faith. It may, therefore, be permissible to offer some comment on Dr. Berkson's exposition.

He makes his general standpoint quite clear in the statement : "The view underlying the following treatment is that an explicit philosophy of life, a reasoned conviction as to basic human values is prerequisite to the conduct of educational processes ; that a social philosophy is the reflection of an era of civilization rather than the result of individual experience ; and that while it is true that philosophy may—indeed must—change, this will happen only when there is epochal change in the character of science and society " (p. xii).

This leading theme is then treated in three parts : The Nature of Educational Philosophy ; Democracy as a Social Philosophy ; and Aspects of a Reconstructed Educational Policy.

In general Dr. Berkson's position may be taken as typical of the "middle-of-the-road" school which of recent years has asserted itself in American thought on education. Though he is sympathetic to Dewey's philosophy (and indeed borrows largely from it), he is no thoroughgoing experimentalist. Nor does he accept the extreme social relativism which, in a peculiarly aggressive form, is now devastating Europe. He realizes that a particular social philosophy must rest on ethical principles which claim universality and carry with them metaphysical implications.

Thus he shows no sympathy whatever with notions that amount to a denial of the very idea of a common humanity : the notion, for instance, that a people may make a religion of its own purely tribal claims and feelings and endow them with the absolute authority which can belong only to obligations that rest on a universal ground. It is such claims that we have in mind when we speak of 'social relativism,' the virtual denial of any true absolute.

One could have wished that the author had given more space to these fundamental issues not merely because of their importance in the present stage of America's development, but because of their extreme practical urgency everywhere. For what is at issue now is not a doctrine of America, or England or Germany, but the central doctrine of Man himself.

We stand at one of those critical turning-points of history where the course to be taken by future development depends upon the kind of belief men now come to form about their own nature and destiny. The self-preservation of nations—as we in Britain are learning—is something involved in that greater issue. From such a standpoint it is clear that what is at stake is something even more fundamental than democracy, as that is usually understood.

Dr. Berkson's treatment of his theme is so well-balanced, and he is so much alive to those dangers of extremism and over-simplification that are so common in American educational thought, that one could wish he had come to still closer grips with his subject. True, the book was written just before the war, and even now the process of purging and disenchantment has probably not gone so far in America as it has in Britain. So what we wish to express is a hope rather than a criticism, a hope that Dr. Berkson, well-qualified as we are sure he is, will revise his book for later publication when the real issues have become clearer.

It is difficult to say what we mean, as the argument of the book appears in the main to be so well-balanced and so democratically correct. But somehow it never seems to get out into the air where the actual fight is going on, the bombs falling, the planes clashing and the guns roaring. It suggests Hegel in his study while the decisive battle of Jena was being fought and lost a few miles away. (Curiously enough the air-alarm sirens sounded as this sentence was being written.)

We can best illustrate our meaning by a somewhat lengthy quotation :

"With a basic socialist democracy established in key countries internationalism will soon become a political reality.

"Internationalism does not necessitate the elimination of the national community as a basis of culture or government. It means

simply the application of the democratic ideals to the relations of nations; the equal right of each nation to maintain its language, its customs and traditions, its laws and institutions, within the framework of a community of nations. It means the free intercourse among nations, the interchange of goods, the travel of persons, the mutual influence of culture, even the unification of formerly distinct cultures will come about as the result of the natural interplay, interchange, and sharing, and not as the result of coercion from above by external political or economic pressure" (pp. 217-218).

Nothing wrong with that, it may be said. In a sense there is nothing wrong, just as there is nothing wrong in a conventional sermon, correct in theology and unexceptionable in morals, which leaves the congregation as cold and sinful as before just because it is the sermon they expect to hear. Or just as there is nothing wrong in the essay of the up-to-date sixth-form boy who has all the formulæ pat, and no experience.

In the deeper sense, the sense that matters for education, it is not so much wrong as irrelevant. Examine the terms and phrases closely and ask what they actually *mean* in terms of the task which education has to face. Are we not still trying to pay our way with a pocketful of verbal counters, all of them rather badly worn, and none of them really exchangeable for the sort of goods we want to purchase? It would be indeed a salutary discipline if we could force ourselves to write and speak under a self-denying ordinance banning for a while certain rostrum terms: democracy, socialism, internationalism, federation, self-determination, collective security, and the like. In the attempt to say what we really mean, without these deceptive aids, it might be that we should discover how little we know what we really do mean. That would force us to look more closely at the object and it is precisely that which is so urgently needed in our present confusion and self-deception.

So we hope that Dr. Berkson will carry his work to the deeper and more vital levels where he may find also a language of point and precision that will really *bite*, as, for an English reader, his present language somehow fails to do.

If he will allow us we will venture to offer two suggestions. One is that he devotes some study to the causes of the tremendous upheavals that have occurred in Europe during the last twenty-five years. The operation of those causes does not stop short at the eastern shore of the Atlantic, and without some understanding of them the formulating of an educational policy to guide our action in the immediate future is likely to do more harm than good.

The other is that he should give the political categories a rest for a time, and turn to the deeper and more significant sociological ones. It is a prevailing vice of English thought, characteristic of a secure and successful ruling race, to think in political rather than sociological categories. But we are beginning to understand the demand that is now thrust upon us.

American thought has been less prone to the tendency, but it is there and needs correction. Otherwise we remain displaying the old models in the showroom upstairs when quite revolutionary things are happening in the factory below. In other words political categories belong to a relatively late phase, when growth has gone far enough for organization and formulation. But what education must be most concerned with now is the new growths that have not yet proceeded so far. There will be lots of weeding and pruning to do, but there will also be much cultivation of new plants. So, if we may change the metaphor, we suggest that Dr. Berkson would do well to shift his interest for a time from the herbarium to the garden—and even to the jungle !

'Self-determination,' for instance, is a showy exhibit, but the real expenditure of sweat and blood in that connection is to be incurred in the taming of many a jungle where seething 'minorities' are resisting strangulation by dominant majorities.

Since our main criticism of Dr. Berkson's book turns upon this point, and since there is great need in England also that we should turn our attention to factors which, as Christopher Dawson puts it, "lie beyond politics," it will be well to give some further illustrations from the book itself.

It is significant that the author (p. 193) seems to use the terms 'state' and 'society,' if not interchangeably, at least with much confusion. This may be, in part, because he is quoting Aristotle and does not allow sufficiently for the difference between the Greek *polis* and the modern State. When Aristotle declares that man is by nature *politikon zoon*, the point is missed if we translate *politikon zoon* by 'political animal.' For, in its modern use, our word 'political' is bereft of just those sociological implications that the adjective *politikon* would convey to the Greek. We have to distinguish those aspects of constitutional form on the one hand and of social life and structure on the other hand which the Greek thought of together.

Again Dr. Berkson quotes approvingly the classic doctrine of majority government, agreeing that "the right of the minority cannot be understood in isolation from the coexisting right of the minorities" (p. 99). True enough, and justly said : but he has nothing to say of the cruelly

intractable cases that are so frequent and still so largely unsolved. We mean those cases where the minority is sharply distinguished from the majority by profound *cultural* differences. What has not yet been generally understood is precisely the fact that such conflicts cannot be settled at all by purely political action. For they spring from a threat to the security of the deepest things; mother tongue, religion, a way of life in family, school and church. Before a settlement can be reached great changes have to take place in social habit and mutual adaptation, even in trifling things, as between majority and minority. These are all in the region of what we have called the sociological. The political settlement, when it is reached, merely registers and secures a concordat that has already been arrived at by other means. To English readers the case of Ireland will come most readily to mind.

Another instance, bearing very directly upon education, is found in the author's handling of conformity. He says: "Another series of new guiding ideas must be directed towards breaking down the habit of mental conformity, and developing in its stead a spirit of criticism—in the sense of intelligent judgment—and an attitude of readiness to accept changes required by the social welfare" (p. 154).

But why treat conformity and criticism as mutually exclusive alternatives? Are not both necessary? Some attention paid to the actual facts of society and the intricate working of social forces (i.e., the sociological categories) would surely reveal three things. The first is the supreme need for a large measure of conformity if society is to hold together at all and individuality to have any kind of scope. The securing of that essential conformity we should ourselves regard as the first function of education in society and in their practice the Americans do so regard it.

The second is the distinction between those areas of life in which conformity is necessary and proper, and those where criticism is a duty to be prepared for by education. (Does not one assume grave obligations in setting himself up as a critic, and should he not know what these are and be equipped to sustain them?) Politics will not help us here: it is just healthy social functioning that we need to understand.

The third thing that would be learned is the ludicrous falsity of the picture of a uniformly intelligent citizenry qualifying itself to pronounce critical and competent judgment on all the complex questions that arise in the functioning of a great modern society. Such a picture is merely the illusion of an untested security and bears little relation to the truth about the modern mass-man. To persist in it only accentuates the peril of which we in Europe now know something. The remedy is only partly to be found in education. There is also needed the deliberate planning

of society and social functioning so as to secure the continuous coming to power of the best and ablest elements.

We have space for only one more example. Speaking of that terribly difficult problem, the teacher's freedom in handling potentially explosive material in school, Dr. Berkson seems to think it enough if the teacher can show that he is sincerely animated by a desire for the common welfare. But is 'common welfare' here anything more than a phrase? What vast ranges of acute difference may it not connote? The die-hard Tory and the extreme revolutionary might be equally well justified in making the claim. Again the appeal must be to a region beyond politics and in the effectual making of it what a world of labour and even struggle may be involved!

Our plea for a diversion of thought from political to social categories, if it were successful, might help to cure certain weaknesses to which democracy in many of its forms is subject. One is the optimistic assumption that real difficulties can be met by the reiteration of generous-sounding phrases. Associated with that is the continuous harping upon rights unpaid for and criticism unjustified by competence. The characteristic disease of democracy is irresponsible self-assertion. How painfully we are ourselves now learning that the necessary obverse of freedom is responsibility!

Lastly, there is the point of educational agencies. Emphasize the political and you are apt to see education as the function solely or mainly of the State-created instrument, the school. Then either you will set the school to tasks for which it is unsuited or certain desirable ends of education will not be attempted at all. But emphasize the sociological and the school falls into its place as one of many social agencies all of which must work in efficient co-operation if education is to have its full value. It would be little short of disastrous if England and America should diverge sharply in this all-important matter of social practice. But Dr. Berkson's book suggests that the danger may be there.

It would be unjust to him to suggest that his attitude and treatment are old-fashioned. It would be truer to call them underdeveloped.

The danger that Britain and the United States may fail to keep pace with one another and become seriously out of step in matters of social attitude and understanding may become acute as war-pressure produces its differential effects in the two lands. That must be the excuse for an outspokenness which has no other motive than to clear away confusion and heighten the chances of rich understanding.

OUTLINES OF RESEARCHES REPORTED IN THESES PRESENTED FOR HIGHER DEGREES OR DIPLOMAS.

THESE OUTLINES MUST BE SUBMITTED THROUGH THE HEAD OF
THE DEPARTMENT IN WHICH THE RESEARCH WAS CARRIED OUT.

A Study of Verbal and Non-Verbal Group Intelligence Tests in the Primary School.

Thesis accepted for the Ed.B. Degree, Glasgow University, 1940.

By A. JOYCE.

SINCE verbal groups tests have been found to involve a group factor, *v*, in addition to *g*, some psychologists have urged that non-verbal tests would provide better measures of intelligence. But it does not follow that such tests would be equally valuable to the teacher, as achievement in many school subjects also involves *g* and *v*. Arithmetic and manual subjects might, however, correlate better with purer tests of *g*.

This problem was investigated in two Scottish primary schools, using eighty-eight children of average age 10½ years as subjects. The tests which were applied were all of the classification and the analogy types. Stephenson's *Southend Group Test* provided twelve verbal and ten non-verbal classification items, and twelve verbal and twelve non-verbal analogy items. The *Otis Quick-Scoring Mental Ability Test (Alpha)* includes ninety non-verbal (pictorial) classification items. Supplementary tests were constructed by the author, including twenty-four non-verbal analogies, sixty verbal classifications, and sixty verbal analogies. Both the standardized and the supplementary tests were found to yield suitable distributions of scores among the pupils tested, with the exception of Stephenson's non-verbal classification test. This test was either too difficult, or in other ways unsuitable, for children of this age. Its reliability coefficient was poor, and its correlations with other tests so low that it is omitted from the subsequent discussion.

The tests were given on four consecutive days, and reliability coefficients for all the items of any one type were calculated as follows :

72 verbal classifications (VC) .....	.811
72 verbal analogies (VA) .....	.881
90 Otis pictorial classifications (PC) .....	.884
36 non-verbal analogies (NA) .....	.800

The *Otis* test has a time limit of twenty minutes. The other tests were given without time limit ; each was completed by all but two or three of the slowest pupils in twenty to thirty minutes.

Teachers' marks or assessments were available for the following school subjects or groups of subjects :

English (reading, composition, grammar, dictation).

Arithmetic (mechanical and problem).

History and geography.

Manual (handwriting, drawing, handwork).

Correlations between tests and school subjects are shown in the following table, All r 's are positive. P.E.'s range from $\pm .036$ to $\pm .066$.

	<i>VC.</i>	<i>VA.</i>	<i>PC.</i>	<i>NA.</i>	<i>Eng.</i>	<i>Arith.</i>	<i>Hist.-Geog.</i>	<i>Manual</i>
VC								
VA .....	.46							
PC .....	.34	.36						
NA .....	.49	.46	.28					
English ..	.51	.55	.34	.33				
Arith. ...	.29	.41	.41	.33	.63			
Hist. ... } Geog. ... }	.47	.55	.45	.39	.68	.58		
Manual ..	.45	.50	.35	.31	.64	.66	.62	

Applying Spearman's methods of factorial analysis, a general factor can be extracted either from the tests, or from the school subjects. The correlations of the subjects with the general test factor are : History + Geography, .74; English, .68; Manual, .63; Arithmetic, .54. The correlations of the tests with the general school achievement factor are : VA, .63; VC, .51; PC, .47; NA, .43.

Clearly the verbal tests give better predictions of general school achievement than the non-verbal tests. If either of the general factors is held constant, and the residual correlations are studied, they are mostly found to be too small to yield definite group factors. Nevertheless, they indicate the following conclusions :

Achievement in arithmetic is better predicted by non-verbal g tests than by verbal ones. Manual subjects, as marked by school teachers, are, however, more dependent on verbal intelligence.

As Burt showed (this *Journal*, 1939, IX, pp. 45-71), verbal subjects such as English, geography, and history, tend to yield a group factor, which is not found in arithmetic or in manual subjects, and which is more accurately predicted by verbal than by non-verbal tests.

The measures of achievement show considerable inter-correlation over and above what is measured by any or all of the intelligence tests. Doubtless this is partly due to the derivation of these measures from teachers' assessments, rather than from educational test results. But it suggests that a factor of interest or industry, distinct from g or v , plays an important part in school work.

There is no indication of any group factor corresponding to the type of test item. The two (or three) kinds of classification items, or the two kinds of analogy items, do not inter-correlate any more highly than do classification and analogy items.

Summaries of Theses submitted in 1940 in part fulfilment of the requirements for the degree of Bachelor of Education, University of Edinburgh. The Theses are lodged in the Library at Moray House, The University, Edinburgh.

The Use of Pictorial Tests in Measuring the Intelligence of Young Children.

By H. BLAIR HOOD.

To get over the difficulty of verbal ability in measuring the intelligence of young children tests of a pictorial nature have been devised. It was desired to compare pictorial and verbal intelligence tests in order to find (*a*) to what extent they correlate with one another, and (*b*) their factors and factor-loadings as revealed by analysis. For this purpose a number of tests were administered to seventy school children of about seven years of age. These were: (1) Simplex Junior Intelligence Scale (verbal), (2) Kelvin Measure of Mental Ability (verbal), (3) Ryburn Group Intelligence Tests (sub-tests 1-3; form perception), (4) Otis Group Intelligence Scale, Primary Examination (mainly pictorial), (5) Haggerty Reading Examination, Sigma 1, (6) Kelvin Measure of Spelling Ability, (7) Kelvin Measure of Arithmetic Ability. Items from tests 1, 2, 4, and 7 were re-grouped so as to make the above variables homogeneous. The inter-correlations of these variables ranged from .35 between pictorial intelligence and spelling to .76 between verbal intelligence and spelling. The correlation between verbal and pictorial intelligence was .49.

A Thurstone centroid analysis, with subsequent rotations, was then performed. It was found that, in addition to a general factor which had a loading of from .7 to .8 in all the tests, there was also a second factor, which was presumed to measure form perception. A third factor was taken out which might perhaps be a verbal factor, while there was a possibility that there existed also a number factor. Finally, as a matter of interest, the relative values of the six variables in predicting the teacher's estimate of the child's school ability were considered. It appeared from this that verbal intelligence, reading and spelling tests were the most effective in predicting the success of young children in the junior school; but to make a sound judgment about the relative merits of verbal and pictorial tests in predicting later success would require a follow-up investigation.

An Inquiry into Specific Linguistic Factors.

By HENRY M. KNOX.

THE object of the investigation was to discover as far as possible whether there exists a specific linguistic factor, as distinct from the generally recognized verbal factor (*v*), and if so whether it is present to a greater degree in intelligent women than in intelligent men, as such a factor might throw light on the great preponderance of women to men in the Honours Schools of Modern Languages at the Scottish Universities. Four tests were therefore constructed by adapting (1) the Sones-Harry High School Achievement Test (English part), (2) The American Council's French Test of Aural Comprehension, (3) The Symonds Foreign Language Prognosis Test (Esperanto), (4) The Hindustani part of Thomson's Northumberland Mental Test, No. 1.

These four tests were then administered to fifty-two school children aged fourteen or fifteen and of above average intelligence; twenty-seven of them were boys and twenty-five were girls. In addition the children were given an intelligence test (the Otis Intermediate Examination for Secondary Schools, form B) and the Spearman Visual Perception Test, part iii. The French teacher was also asked to furnish a representative percentage mark for each child.

Correlation coefficients were calculated between all seven variables for both boys and girls. These ranged from - .34 between Spearman and Teacher's Estimate (girls)¹ to .60 between English and Teacher's Estimate (boys).² In general, there was considerable divergence between the correlations for boys and those for girls. Owing to the small number of cases, however, few of these can be regarded as significant.

Factorial analyses by Thurstone's centroid method, with rotation, were performed. For the boys, results were reasonably satisfactory, giving loadings in "g," "v," and a possible linguistic factor which appeared to correspond to the psychological probabilities of the various tests. In the case of the girls, however, it was not easy to interpret some of the loadings found. In general, the results, while giving some support to the existence of a linguistic factor, as well as a "g" factor and a verbal factor (v), did not appear to indicate that this factor was present to a larger extent in the girls than in the boys. To give more definite conclusions, however, it would be necessary to repeat the experiment with a larger sample of children of both sexes.

Are Bilingual (Gaelic-English) Children Handicapped in English Verbal Intelligence Tests?

By JOHN R. MORRISON

THIS research was concerned with the question whether children in the Gaelic-speaking areas of Scotland are at a disadvantage when judged, as to intelligence, through the medium of group verbal "intelligence tests" constructed in the English language, which to such children is a "second" language, acquired mainly—in some cases wholly—at school.

Seventy-seven subjects, aged eleven years, were tested with four tests, two verbal (Moray House Test 21 and Burt's 1925 Northumberland Intelligence Test) and two non-verbal (Spearman's Visual Perception Test, part iii, and Stephenson's G-Test No. 1). Of these, seventy-two were utilized—those in whose homes Gaelic only was spoken—in the main part of the investigation. They were drawn from five rural elementary schools in the island of Lewis, Ross-shire. The results, while not conclusive in the absence (at present) of norms for the Stephenson test and of adequate norms for the Spearman test, afford some evidence for the thesis that these children *are* so handicapped; for the mean score on the Spearman test appears, on the basis of such data as are available from other applications of this test, to be significantly higher than was to be expected from the mean scores on the two verbal tests, while the positive skewness of the "verbal" score-scatter and the negative skewness of the "non-verbal" score-scatter seem to yield some degree of support to Decroly's hypothesis that the most intelligent children may be less handicapped by their bilingualism than the less intelligent.

¹ The corresponding figure for boys was .01.

² The corresponding figure for girls was .07.

Another possible interpretation of these opposite skewnesses (assuming that intelligence in the Lewis population is, actually, distributed normally) may be found by applying Walker's theory (*B. J. Psy.*, XXII, p. 73; XXVI, p. 301; XXX, p. 248) that increasing the proportion of "difficult" items in a test tends to skew the score-scatter positively, and *vice versa*. On this interpretation the bilinguals found more of the verbal items "difficult" than the monoglot children on whom these were standardized, while they apparently found more of the non-verbal items "easy," though as we do not know the type of score-scatter produced in a "normal" population by these two non-verbal tests we cannot be at all confident about this.

Means and S.D.'s were as below, each followed by its standard error (not its P.E.):

(1) M.H.T. 21	Mean "I.Q." 90.55 ± 1.51 , S.D. 12.85 ± 1.07 .
(2) 1925 Northumberland ..	Mean "I.Q." 87.83 ± 1.66 , S.D. 14.07 ± 1.17 .
(3) Spearman V.P. III	Mean Raw Score 24.78 ± 0.66 , S.D. 5.64 ± 0.47 .
(4) Stephenson G.1	Mean Raw Score 59.42 ± 2.81 , S.D. 23.81 ± 1.98 .

In test (4) Stephenson's *first* method of scoring was used.

Correlations (all significant at the 0.1 per cent level) were: $r_{12} = .89$, $r_{13} = .52$, $r_{14} = .58$, $r_{23} = .47$, $r_{24} = .51$, $r_{34} = .49$.

(All these are between raw scores except r_{12} , which refers to "I.Q.'s.") The low non-verbal correlation (r_{34}) is noteworthy.

Split-half Reliabilities ("stepped-up") were: $r_{12} = .98$, $r_{34} = .97$, $r_{23} = .68$, $r_{41} = .92$.

No significant differences were found between the five schools.

An Investigation into the Assessment of Teaching Ability.

By T. K. NANDI.

THE purpose of this study was:

- (1) To investigate how far the Coxe-Orleans prognosis test of teaching ability, which is being used in America as a standard for entrance to teacher-training institutions in New York State, can be used as a (predictive) measure of teaching ability of a group of undergraduate students.
- (2) To investigate how far teaching ability is related to merit shown in the training college subjects.
- (3) To investigate how far general intelligence can be considered as a factor in determining the student's teaching efficiency.
- (4) To compare the value of the prognosis test and academic success as measures of teaching ability.

The subjects to whom the prognosis test was given were fifty (non-university) women students of a certain training college. These students formed a highly selected group, the I.Q. range being from 115 to 131 with a standard deviation of 4.28. The criterion used was the teaching mark given to the students on their practical teaching performance by a Board composed of the training college supervisors. The academic success of the students was measured by the examination marks in the various training college subjects:

Psychology, Education, English, History, Nature Study, Geography and Mathematics. Their general intelligence was measured by the advanced examination of the Otis group intelligence scale.

The conclusions obtained were :

- (1) Of the five parts of the prognosis test, Part I (which had been considerably modified to suit British students) gave the highest correlation (.277) with the criterion, and the multiple correlation between the criterion and the five variables in the test was .399. Neither of these coefficients is statistically significant.
- (2) Of the seven training college subjects, geography gave the highest correlation (.244) with the criterion, and mathematics the lowest (-.160). The multiple correlation between the criterion and the seven subjects was .382. These coefficients are also not significant.
- (3) The correlation between the criterion and I.Q. was negligible (-.04), indicating that relative intelligence is not a factor in determining the teaching abilities of students already selected for intelligence.
- (4) Since the correlations obtained in (1), (2), and (3) are not significant, problem (4) does not arise.

A Secondary School "Follow-Up."

By HELEN ALISON SMITH.

In this "follow-up" a complete age group of elementary school children in an English borough were examined in 1936 for free entrance to the secondary school. The examination consisted of a Moray House Group Test and this was taken in conjunction with the estimates of head teachers to form a basis for the allocation of scholarship places. Sixty-five boys and fifty-seven girls whose I.Q. exceeded 115 and who were placed high in the head teacher's estimate received scholarships and subsequently completed three years in the secondary school. Borderline cases where the head and the test disagreed were given additional tests, individual and group, but so few completed the secondary course that a statistical investigation for these cases was impossible. The head teachers of the secondary schools gave their order of merit for the above pupils, and in this thesis an attempt was made to examine the elementary school results and the results of the intelligence test in the light of the secondary school achievement three years later.

The sixty-five boys were drawn from six elementary schools—seventeen, fourteen, eleven, nine, eight, and six boys from each—and correlations were calculated by the rank difference method within each group, and then averaged by calculating $\sqrt{\frac{\sum r^2}{6}}$. The girls also came from six elementary schools—fourteen, ten, nine, nine, eight, seven in each—and their correlations were also calculated. These correlations are :

	Boys.	Girls.
I.Q. and Secondary School Ranking .....	.464	..
I.Q. and Elementary School Ranking .....	.543	..
Elementary and Secondary School Ranking....	.619	..

These results show that the highest correlations exist between the rankings of the elementary and secondary head teachers. It would seem, therefore, that the best prediction among these schools of secondary school achievement is that given by the elementary head teacher.

The Use of Elementary School Head Teachers' Estimates Coupled with Performance in Intelligence Tests as a Measure of Performance in Senior Schools.

By THOMAS HUNTRY.

THIS "follow-up" study reports on a complete age group of 552 pupils of an English borough who were examined in 1937 for entrance to senior schools in the borough. These pupils were given a Moray House Group Test, and were also ranked by their head masters, and two years later they were again ranked by the senior school head masters. The correlations between senior head teachers' rankings (1939) and I.Q. (1937) (in all but three schools out of twelve) vary from .64 to .88. Since some elementary schools had very few people to be ranked, it was decided to make fifteen the minimum number of pupils who would be ranked in the elementary school, and who would proceed to the same secondary school to be ranked later. This reduced the original 552 to 270. Since these 270 pupils were drawn from different samples the correlations were pooled and appeared as follows:

I.Q. and Senior School Ranking.....	.635
I.Q. and Elementary School Ranking .....	.716
Elementary and Senior School Ranking .....	.725

As in the case of Miss H. A. Smith's investigation with secondary schools, it appears that the elementary head teacher's estimate has a better predictive value than the intelligence test.

In this inquiry there is a very full discussion of borderline cases, particularly those who have been ranked high in the elementary head teacher's estimate, and who failed to reach the minimum I.Q. agreed upon—118 for boys and 115 for girls. These pupils were given further intelligence and attainments test, both group and individual. In this group numbers are too small to permit of a reliable statistical investigation, but the thesis gives tables showing the history of individual pupils, and these illustrate how the head teachers' estimates may be supported or modified with the help of the other tests.

BOOK REVIEWS.

The Value of Vocational Tests as Aids to Choice of Employment. Second Report of Research : By E. PATRICIA ALLEN and PERCIVAL SMITH. (City of Birmingham Education Committee, pp. 45. 1s. net.)

A first report of this interesting piece of work was published eight years ago. Since then vocational guidance has been continued on a larger scale. The two investigators trained a number of teachers and members of the organizing staff of the Juvenile Employment Department to give the tests, and children were tested during their last term at school. The head teacher, the teacher who had administered the tests, the juvenile employment officer, and the investigators then met to consider the results of the tests, *plus* other relevant data, and decided what guidance should be given. In 820 cases a 'follow-up' was carried out over two years, and for four years in 271 cases. The present report deals with the results gained from four elementary schools—two girls' and two boys'. The remaining fifteen schools are to be dealt with in succeeding reports.

Each child tested in these four schools was also given a special medical examination during his last term as the vocational tests. Temperament estimates were also compiled. Control groups were used. These were not given the tests nor were temperament estimates compiled, but the children were advised as well as possible on the other available information. The 'follow-up' information was obtained from the children and from the employers, old scholars' clubs, records at the Juvenile Employment Department, and from after-care reports. Lists of tests are given and samples of the rating scale for personal qualities and school subjects, the medical report form, and the vocational guidance report form for summary. It is a pity that no 'cases' have been included as examples.

It is found that children who were given vocational guidance and who followed the advice given were decidedly better placed in industry than those who did not follow the advice. In addition they were better placed than children of the control groups which were advised without the vocational tests.

As the investigators mention, previous work in Birmingham and elsewhere has produced similar results. The value of this particular work would seem to be more than mere corroboration of previous findings. It lies partly in the additional specific facts which emerged, viz., first posts entered, intermediate posts held, last posts held, transference, duration of posts, children's and employers' estimates of suitability of posts. It is also valuable as an illustration of the way in which different branches and departments can work together in a matter of this kind. Most important of all, perhaps, is the fact that 820 children got the best available advice at the outset of their careers and for two or four years had further advice when required.

The value of such work to industry, to the city, and to the whole community it is impossible to assess. The value to many of the individuals concerned could hardly be exaggerated. As the Chairman of the Education Committee (Alderman Byng Kenrick) writes in the foreword he contributes to the report : "Wise guidance in the choice of employment is not the least of the gifts which age can bestow upon youth."

F.M.A.

The Bearings of Psychology on Religion : By S. H. MELLONE. (Oxford : Basil Blackwell, 1940. 12s. 6d. net.)

Dr. Mellone is perhaps best known as the author of a widely-used text-book on logic. He has also been Lecturer on the History of Christian Doctrine, and has a scholarly knowledge of early religions rare amongst writers on the psychology of religion. There is much information on the history of religions which should be of value to the psychological student of religion. The contributions to knowledge about the bearings of psychology on religion are less than one might have hoped and are somewhat disproportionately devoted to the bearings of Freudian psychology.

R.H.T.

The Failing Student: By K. L. HEATON and V. WELDON. (University of Chicago Press, pp. 286. 12s. 6d. net.)

This study, sponsored by four Michigan colleges, is frank enough to confess that it does not contain 'all the answers' to a problem that intrigues all teachers. It was prepared as an internal report, and includes what are called 'tentative bunches' as well as an amount of detail that can be significant only to the conditions of a particular institution.

It raises serious problems. Should students be required to study only those subjects in which they do well? Should they be assessed not by their average performance but by their best achievements? How far are poor methods of reading and study, rather than poor intelligence, the cause of failure? Should we assess pupils not by their retention of subject matter, but by their methods of work, their physical and mental health and their personal and social relationships?

The method of procedure was one of co-operation between investigators and students, and the frankness of the latter gives the book its main interest. They talk about their economic worries, their paid work, their health, their future vocation, their personal and social problems and, above all, about their teachers with an American readiness that surprises us. No doubt English students discuss such matters with one another, and sometimes with a trusted tutor in confidence, but they would shrink from publishing them. And what lesson are we to learn from the fact that an American teacher "wears clothes that should be in the laundry bag. She wears one smock for two weeks until it becomes so dirty it could almost stand alone?" Or from the fact that a poor American student confesses: "I would like money for recreations, dates, dances, occasional good shows: maybe a little lager lapping?" Not all the revelations are so picturesquely expressed but many of them are of little use to us, and to reduce these personal idiosyncrasies to statistics and percentages reveals nothing.

It is right that any institution should consider the problems raised in this book; it is doubtful whether the results should be published, at least in such detail.

F.S.

Modern Psychotherapy: By NOEL HARRIS. (John Bale Medical Publications, Ltd., pp. vi+144. 7s. 6d. net.)

This book is broader, more balanced in treatment, and much less dogmatic, than most of those of a similar type which have appeared in recent years. The author gives due recognition to the multiplicity of factors which cause mental disorders and to the difficulty of separating into clearly defined types. His statement of the aim of the book is a modest one, namely, "that it may provide some helpful information for the general practitioner who has to decide which of his patients should attend clinics and specialists for psychological treatment, and that it should help him to be more cognizant of just what that treatment is. In addition, I hope that it may prove a useful guide and starting off point for those who are wondering whether they will find the study of psychological medicine interesting and worth while." The book should certainly accomplish this aim. Our criticisms would largely be on points of detail, and at times of a superficiality which is perhaps inevitable in so short a book. The chapter on child guidance is, unfortunately for readers of this *Journal*, probably the weakest.

Psychology and Psychotherapy: By WILLIAM BROWN. (Edward Arnold, pp. viii+260. 12s. 6d. net.)

This is the fourth edition of a book first published in 1920. As we pointed out in a review of the third edition, that was a very substantial revision, making the book almost like a new one. In this new edition there are two new chapters, a useful one on "Sublimation," and an interesting one on "Problems of Later Life." The book is probably the most useful of Dr. Brown's various publications for those who wish to study his special point of view. It certainly puts psycho-therapy in a wider psychological setting than is usual in books of medical psychology.

Founding of the American Public School System, Vol. I : By PAUL MONROE.
(Macmillan, pp. 507. 15s.)

No work by Professor Monroe could be expected to be anything but encyclopædic ; the story which he tells in this book fills about 500 pages with a close though abbreviated survey of the origins and development of the American Public School System from the time of the early Colonists to the end of the Civil War. By the latter time the foundations supported something like a national system so the purpose of the survey has been accomplished. The production of this work has involved reference to many sources which have been made available for examination by students who may be able to visit certain selected libraries in the States where they will find micro-filmed copies and the apparatus necessary for reading them. We on this side of the ocean have no access to this new departure in publishing, but the volume now before us can be studied without the help of Vol. 2, for the author's conclusions are accompanied by much descriptive detail and are abundantly illustrated.

The present reviewer believes that the study of the American Public School has not been presented in this form before, at least in England. The reading is lightened by many incidental references and illustrations, giving a vivid picture of the schools in successive periods, of the people who administered them, and of the young folk attending them.

While at times the reader will detect many similarities between what has happened in the States and in the course of development in our own national system, at least in the early stages, it cannot be expected that under conditions differing so greatly in the two countries parallels can go far. In some States the educational ideas which were current in seventeenth century England will be found ; elsewhere they have followed other courses. Holland had its influence, too, so that traditional plans from the homelands of Colonists have formed the basis on which they carried on until the influx of immigrants, of negroes as slaves, and the social changes accompanying developing industries, transport and communications, the postal service and increase in the numbers and sizes of towns, brought about in due course a system of universal education that may now be described as national.

In America teaching was first of all for industry through the home ; for the majority who had it at all it was vocational, obtained by apprenticeship to which school laws attached an obligation on masters to see that means for learning reading and writing were provided. In the Southern States there was confirmed belief in principles of universal, vocational and religious education, but the belief did not imply inclusion of a literary element. That was only reached after a time ; in the meanwhile, private, charity and endowed schools gave what they could towards literary instruction.

The Middle Colonies were provided for by religious bodies ; the Government made its influence felt though it did not supply schools. A tendency was found in these States towards higher education in a democratic type of school, the academy, which with a wide modern curriculum was to prove in the end more popular than the Latin schools even although the latter had in their day been accepted generally. The nineteenth century had the town school and the dame school and on the whole fair provision for girls as well as boys.

The idea of universal education seems to have been firmly established by the end of the eighteenth century. It prepared the way for nationalization, but the conditions before 1830 did not favour its realization for some time. Taxation began in New York but the sparsely distributed population was a bar to efficiency in a system.

In the thirty years before the Civil War progress was fostered by educational propaganda. New ideas were imported from Europe and were tried out in the States. American educationists ventilated their philosophies. On the whole emphasis was put on the non-religious character of education and upon the higher instruction of adults. Meanwhile movement was made towards free education. Some help had been given to schools in the past by the possession of land or from voluntary societies, but Government grants were now made for tuition and by degrees rating, which seems to have been of a limited kind, gave place to local taxation.

Democratization has been largely due to American attention to method leading away from older mechanical lines on which instruction had run. The Colonial

colleges held the place taken by universities elsewhere. Although they were concerned with trainees for the ministry it was not to the exclusion of attention to the social and literary needs of a wider section of the public.

Professor Munroe has covered much ground giving us a quantity of detailed information in this book, which is a valuable addition to the historical side of education literature.

A.P.B.

The Difficult Child and the Problem of Discipline : By C. W. VALENTINE. (Methuen, pp. 104. 4s. net.)

Unfortunately for education some psychologists have been so pre-occupied with their theories that they have tended to treat children as 'cases' instead of using their technical knowledge to illuminate their common sense and sympathetic understanding of individual boys and girls. Professor Valentine is conspicuously free from this weakness, and the first part of his valuable little book is a refreshing protest against such one-sided exaggerations as that of ascribing all the abnormalities of young children to sexual impulses. He shows the fallacy of supposing that a good environment would make all children good; or that a child's character is definitely formed during the first few years of his life. He has also some wise things to say about the value and limitations of the work done by child guidance clinics. In the second part of the book he discusses some practical problems of discipline with the same combination of expert knowledge and sympathetic insight. He emphasizes the often neglected fact that the training of children in the home, no less than in the school, is a difficult art which makes high demands upon those called to practise it. He speaks not only of difficult children but also of difficult parents, the lax or overstrict, the self-indulgent and inconsistent. As the title indicates, the book deals more especially with discipline as a means of overcoming abnormalities in character and behaviour, rather than of promoting the healthy happy growth of children who present no special problems. We shall look forward to the promised book which will give a more comprehensive account of mental development in early childhood ; in the meantime, however, this instalment is heartily recommended to all who are interested in child psychology, whether from a scientific standpoint or as teachers and parents. It will prove of special value to those who have been perplexed or captivated by what its author rightly calls the fads and fallacies of some writers on the subject.

H.B.S.

Ist Die Aggressivität Ein Übel? By VON TORA SANDSTRÖM. (Stockholm : Albert Bonniers Förlag, 1939, pp. 186.)

The first chapter sums up Freud's theories. The following chapters show the author's divergences from Freud and Adler. The author does not agree with the former in considering aggressiveness an evil, nor does she agree that there is a sexual disturbance behind every case of neurosis. Neurosis mainly originates in fear, though a sexual form may later be assumed. Don Juan suffered from weakness of the ego in the first place. The author's view explains why many model children develop criminal tendencies. It is unwise for parents to be always on their best behaviour. Children should not be taught to earn a parent's love. Presumably the author would consider the schoolmaster who is 'a father to his children' as worthy of at least suspicion. Between the defiant and the too obedient she would choose the former.

A.T.

Psycho-analysis : By EDWARD GLOVER. (London, John Bale Medical Publications, Ltd., pp. 139. 12s. 6d.)

Dr. Glover in the Preface to this little book refers to the difficulty of condensing the theory and practice of psycho-analysis within the space available, but hopes that the outline will give some idea of the existing scope and future possibilities of the science to the practitioner. The author can be congratulated on his selection of material and on the skill with which he has presented his subject matter.

Education and the Birth Rate: By GRACE G. LEYBOURNE and KENNETH WHITE. (Jonathan Cape, pp. 375. 10s. 6d.)

The economic aspects of education are usually discussed from the narrow view-point of rising costs and ratepayers' burdens; this work breaks through such limitations and explores a much wider field, particularly the effects of such costs on the birth-rate. The facts are gathered from many sources; the speculations are bold and striking; the study is a most valuable commentary on our educational developments during the last hundred years.

It must be read with the authors' admission (p. 40) constantly in mind: "The cost of education forms only part of the wider category of economic causes, and other forces, biological, religious, psychological and social, have contributed to the new situation of a birth-rate falling with ever-increasing momentum from year to year." For the reader, in concentrating his attention on one cause, may be tempted to forget the others and find his mind building up a picture of parents, worldily-wise and calculating, rigidly fixing the number of children they can afford to provide with an education that will give them a fairly certain chance of success in life. But how many parents set out with so clear-cut a scheme of assets and liabilities?

The isolation of one cause serves to clarify its significance, but it cannot determine its relative importance, and, consequently, it cannot suggest the whole remedy. For this reason the final chapter is less convincing than the able chapters which show the increasing severity of competition, the growing prestige of the public schools, the inadequacy of any scholarship system to meet the rising burden of costs, and the resulting 'capricious inequalities' of our educational system. The problem runs through all classes of society, and the more privileges which an expanding system offers to the selected few the wider the gulf becomes between them and the rest. In Manchester one in five of those who won special places in secondary schools were unable, because of poverty, to take them up. For although no fees were to be charged, and small maintenance grants were available, a boy of fourteen may earn a wage of £30 or more a year, and increase it annually by £10 or more. To keep a child at school beyond the minimum age of fourteen is for many a problem that imposes the severest restrictions on all other forms of family expenditure. And even if it is possible for one child it becomes less possible for a second or a third.

The fact of social injustice is now being everywhere discussed and so far as education is concerned this book gives a convincing account of its nature and range. Whether its discussion of remedies will answer the hopes aroused by the book is another question, and whether the proposed remedies would counteract the forces which depress the birth-rate is still to be proved. Of the two chief remedies put forward one could be secured within a reasonable time by a really convinced Minister of Education. It is the establishment of a genuine parity of status between all types of post-primary schools, a principle implicit in the Hadow Report and warmly supported by the Spens Report. But the authors of this book regard this reform as useless without the establishment also of a social and economic parity in the larger world that would make all occupations for school-leavers "equally well thought of socially, and equally well remunerated," with an equivalency, too, in the degree of unemployment and insecurity between all types of work. And who is the Minister who will secure this? A dictator might impose it; a wise and well educated nation might in time achieve it. But to abandon the task of educational reform until it is achieved is a policy of negation.

F.S.

Odd Numbers or Arithmetic Revisited: By HERBERT MCKAY. (Cambridge University Press, pp. 215. 7s. 6d.)

Mr. McKay has certainly written an extremely interesting book. As he truly says "few people seem to have any knowledge of what one may call educated arithmetic, the arithmetic that leads to results that are interesting in themselves." He has done his best to provide the material from which one may obtain some of that knowledge. Teachers of mathematics will place this book on the shelves of school libraries and will probably have the satisfaction of seeing it well used by the scholars.

Shell Shock in France, 1914-18: By CHARLES S. MYERS, C.B.S., F.R.S. (Cambridge University Press, pp. xi+146. 4s. 6d.)

This book is based on a war diary kept by Dr. Myers during the years mentioned, for part of which time he was Consulting Psychologist to the British Armies in France. As Dr. Myers began this work as early as October, 1914, it will be seen that he had opportunities for observing the early developments of the treatment of soldiers suffering from what was called in general terms, 'shell shock.' Dr. Myers himself criticizes the use of this term, although confessing to being one of the first to use it at a time when he was "inclined to lay some emphasis on the physical shock produced by the bursting of a shell as a prime cause of the dissociation."

The story of the development of the psychological work as given by Dr. Myers, and of his own pioneer work in it, is of great interest, although one hopes that most of the lessons which were learnt only so slowly by our medical authorities in the Army, have resulted in a very different state of affairs to-day. In addition to this personal and historical sketch, however, Dr. Myers gives some valuable chapters on the Features Causation and Treatment of 'shell shock' and the Psycho-pathology of 'shell shock.' These should be of great interest to medical psychologists under present war conditions.

C.W.V.

The Neuroses in War: Edited by EMANUEL MILLER. (Macmillan, pp. xii+250. 10s. 6d. net.)

This is a collection of papers by some eleven different authors, all medical men, on various aspects of the main problem of neuroses. The independence of the chapters no doubt results in a certain amount of overlapping, and in some differences of opinion, but neither of these seem to be a serious objection; indeed, the latter is an advantage in the present state of our knowledge about war neuroses. The book should be helpful both to medical men and psychologists, for even if the latter may find in some chapters little systematic psychological discussions, the records of individual cases are of interest. Dr. Culpin's contribution is notable here. The most useful for their systematic treatment are the Editor's chapter on "Psycho-pathological Theories," Dr. Hadfield's chapter on "Treatment by Suggestion and Hypno-Analysis," and Dr. Wright's on "Technique of other Psychotherapeutic Methods."

Dr. Crichton-Miller sums up with a general conclusion. His generalizations, here as elsewhere, are very interesting, but sometimes hardly bear critical examination. For example, the hysteria of the male is supposed to be traceable to his weaning from the mother, whereas "the hysteria of the female is related to her need for the co-operation of the male for the satisfaction of her maternal aspirations." But surely the baby girl also learnt to cry for her mother, and not all men can get precisely that co-operation in mating which they desire.

Body and Spirit, by ANDRE BERGE and Others. (Longmans, pp. vii+200. 7s. 6d. net.)

This is a translation of a French book entitled *Problèmes de la Sexualité*. The essays are written in a free and popular style, and from a standpoint of agreement with the teaching of the Catholic Church on sexuality and sexual relations. Five of the nine authors are themselves Roman Catholics.

The chapter of greatest interest to readers of this journal will probably be that on "Sex and the Child," in which sexual education is discussed in a frank and sensible manner. It is of interest, for example, to note the moderate view taken on the question of masturbation. The chapter dealing with Freud is both fair and acute. Other interesting chapters are "Marriage and Society," "Sexual Hygiene or Sexual Purity?" and "Biology and Sexual Morality." Apart from its value to Roman Catholic readers the book should be of real interest to others as expressing the particular point of view of Catholic writers on difficult sexual problems.

The Dilemma of Penal Reform: By DR. HERMANN MANNHEIM, with a Preface by Professor A. M. CARR-SAUNDERS. (George Allen and Unwin, pp. 238. 7s. 6d.)

Dr. Mannheim brings to the study of penology a first-hand experience of European and American procedure, many years' Continental judicial experience, a wide range of relevant scholarship, and an enthusiastic idealism tempered only by his familiarity with practical problems. This book, therefore, introduced as a first instalment, is an important contribution to penology.

Actually Dr. Mannheim presents four dilemmas: the fundamental one dependent on the opposition between the desire to regenerate the criminal and the fear of making his imprisonment too attractive; the economic opposition between the necessity for public economy and responsible authority's desire for maximum efficiency, together with the problems of the employment of criminals, the payment of wages, and after-care; thirdly, the social problems consequent on the loss of the law-breaker's civil and social status; and, finally, the legal dilemma of combining maximum social security with the satisfaction of the individual needs of the criminal.

A stimulating chapter on "Future Trends in Penal Reform" concludes this interesting, fully documented, and readable book.

J.M.

Statistical Calculation for Beginners: By E. G. CHAMBERS. (Cambridge University Press, 110 pp. 7s. 6d. net.)

Many biologists and psychologists will welcome this book which has been prepared expressly for them and particularly for those who lack time, or perhaps aptitude for mathematical studies and yet who require to apply to their researches the discipline which mathematics can afford.

Statistical Calculation deals with averages, scatter, distribution, means and differences between means, correlation, regression, and the correlation ratio, contingency and 'goodness of fit.' So it covers a wide field. Formulae are at times introduced without reference to the methods by which they are obtained; the reader is told frankly when difficulties make it inadvisable in a work of this kind to discuss the genesis of a formula; now and again transformations and substitutions occur rather bellying the claim that no mathematical ability has been assumed on the readers' part beyond that required to do arithmetic; nevertheless, the author's exposition is quite clear throughout and the student is assisted by good test questions and material for exercises.

It is a pity the publishers have not seen their way to produce this excellent book at a lower cost so as to facilitate its sale for the students' shelves rather than (or besides) for the reference library.

A.P.B.

Culture and Survival: By GUY CHAPMAN. (London, Jonathan Cape, pp. 243. 8s. 6d.)

The author of this scholarly book has made an important contribution to the study of one aspect of a very important problem, the relationship between the cultural basis of England and the growth and decline of her population. He traces the history of the population changes in the eighteenth and early nineteenth century and in the period after the introduction of steam power. He traces the various changes in society, in economic life and in the resulting reorientation of classes. The growth of leisure is accompanied by many changes, including the waning of culture, and the decline in population. The implications of this latter are carefully discussed and suggestions made for meeting the difficulties of the situation. Mr. Chapman particularly emphasizes the importance of what he calls 'rational education.' He is critical of much of what passes as education in this country to-day, and stresses the need for improved adult education especially along the comparatively new lines of art, music, and drama.

The book is based on the analyses of the Social Biology Department of the London School of Economics, and might well be studied intensively by many adult educational classes.

Semantic Frequency List for English, French, German and Spanish:
Compiled by HELEN S. EATON. (Cambridge University Press, pp. xix+441. 30s. net.)

This is a valuable work issued by the Committee of Modern Languages of the American Council on Education. It gives, as the sub-title indicates, a correlation of the first 6,000 words in English, French, German and Spanish. It should be of great value to the teachers and students of these languages, and also to some extent, as Professor Thorndike points out in a short preface, to anthropologists and psychologists interested in the psychology of language. The book is admirably produced and arranged, with full indices, and with most interesting tables dealing with such topics as the conceptual analysis of the substantives, verbs, etc., in the list.

The Teaching of Science in Elementary and Secondary Schools: By VICTOR H. NOLL. (Longmans, Green and Co., pp. 238+viii. \$2.0.)

Professor Noll, of Michigan State College, has written an interesting book on science teaching. His approach to the subject is scientific; he has collected much evidence from unpublished theses, and from a wide and careful survey of the literature of the subject and has thus placed at the disposal of his readers much evidence normally unobtainable. He devotes much attention to the questions of "Measurement of Achievement in Science" and "The Chief Uses of Tests in Science." Although the book necessarily deals with American conditions it will be read with interest and profit by many science teachers in Great Britain.

The Educational Needs of Democracy: By W. P. ALEXANDER. (London, University of London Press, Ltd., pp. 108+ix. 3s.)

Dr. Alexander has been persuaded to publish a series of lectures which he has given to educational bodies during the past two years. He devotes chapters to "The Psychological Bases of Education," "The Significance of Individual Factors," "School Organization based on the Hierarchic Theory," "The Backward Child," "Methods of Selection for Post-Primary Education," and "The Educational Frontier." He brings to bear on all these topics his considerable psychological knowledge. The book should be read and carefully examined by teachers and educational administrators.

OTHER PUBLICATIONS RECEIVED.

Intelligence and Mental Growth: Claude A. Claremont, pp. 138. (Psyche Miniature General Series, 2s. 6d.)

Measuring Intelligence of Indian Children: V. V. Kamat, pp. 278. (Milford : Oxford University Press ; Rs. 4s.)

These Are My Jewels: Paula Wilking, pp. 311. (Peter Davies, Ltd. ; 10s. 6d.)

A CORRECTION.

A COMPARATIVE INVESTIGATION INTO THE FACTORS INVOLVED IN MATHEMATICAL ABILITY OF BOYS AND GIRLS.

By A. M. BLACKWELL.

One of the tables in the above-mentioned article, published in this journal, Vol. X, Part III, page 215, proved to have some errors on further checking. The whole has now been re-checked. The resulting figures do not alter any of the subsequent deductions made from these results.

Table VIII should read :

	Test.	Rotated factor loadings				h^2
		I(g)	II(o)	III(v)	IV (residual)	
1	Arithmetic reasoning ....	.823	.146	-.089	-.148	.7285
2	Missing numbers .....	.663	.000	.000	.000	.4395
3	Algebraic computation and reasoning .....	.680	.091	.172	-.078	.5063
4	Spatial .....	.437	.799	.000	.000	.8292
5	Geometry .....	.602	.184	.356	-.245	.5830
6	Selection and rejection ...	.480	.257	.450	.100	.5090
7	Selection of words in context .....	.058	.225	.318	.472	.3776
8	Analogies .....	.462	.114	.595	.000	.5801
9	Sequences .....	.255	.751	.463	-.045	.8454
10	Mixed relations .....	.167	.143	.055	.523	.3254
		I ¹	II ¹	III ¹	IV ¹	Total
	Σh^2	2.672	1.416	1.039	.596	5.723
	$\frac{\Sigma h^2}{n}$	.467	.247	.182	.104	1
	Percentage of total communality	46.7	24.7	18.2	10.4	—
	Percentage of total variance ..	26.72	14.16	10.39	5.96	—

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THE BILLETING OF EVACUATED CHILDREN.

By CYRIL BURT.

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I.—SCIENTIFIC INQUIRIES AS A BASIS FOR PRACTICAL GUIDANCE.

SINCE the evacuation of school children was first proposed, numerous opinions have been expressed both on its probable effects and on the factors assumed to make for successful or unsuccessful billeting. Few writers, however, seemed to have realized that such opinions could be, and ought to be, checked by a statistical analysis of the facts. Thus, three months after the outbreak of war, a head mistress, writing in an educational journal, declared that "our children are rapidly becoming sheer nervous wrecks"; and equally extravagant pronouncements appeared from time to time in the pages of medical journals and of the daily press. Actually a first-hand inquiry quickly showed that the number of marked neurotic cases among school children had increased but slightly, viz., from about 4 per cent to about 5 or 6 per cent at most (1).¹ Sweeping and often conflicting statements were similarly made about the favourable or unfavourable influence of such factors as the presence of local children living in the same house as the evacuees. A statistical comparison, however, quickly showed that, as a rule, this particular factor had little or no influence (4), (6). Others, which had been suspected, were certainly operative; but their relative importance differed widely. On these and similar points the writers had evidently generalized too rashly from a few conspicuous and often exceptional cases.

During the past eighteen months systematic inquiries, planned so far as possible on scientific lines, have been carried out among evacuated children, both of school and of

¹ Numbers in parentheses refer to the list of publications given at the end of this article.

pre-school age, in various parts of the country. And it certainly seems time to bring together into a single comprehensive review the impressions and inferences thus obtained. Such a survey should be of immediate practical service. It may also stimulate more adequate confirmation of the views expressed. And, finally, it may serve as a permanent record that will be of interest to the theoretical psychologist of the future.

Before the outbreak of war the Psychological Laboratory of University College, London, which had close and informal contacts with the schools and officials of the London County Council, had already drafted a schema of inquiry, and sought the co-operation of a small group of teachers and social workers—largely past students of psychology at that Department or at the London Day Training College; and intensive studies were started on a limited scale among children evacuated to Malvern, Aberystwyth, and elsewhere (1), (6). In the first number of this *Journal* to appear after the outbreak of the war, the editor himself inserted an appeal for scientific inquiries among evacuated school children, and in the following number himself published a full and useful *Report-Form* which may be employed for such purposes (2).¹ The Medical Research Council has also contributed a grant for a study of the effects of evacuation on adolescent girls (5); and a most suggestive statistical study was organized by a group of psychologists at Cambridge (4), (11).

As regards more general conclusions, the reports and replies to our questionnaires, sent in from different parts of the country, are largely in agreement; and, during the course of the work, numerous practical suggestions have been incidentally received.² At an early stage, on the request of one of the directors of education, we drafted leaflets of advice to be sent, one to officers in charge of billeting arrangements, and the other to intending foster-parents. As further information accrued, our roneoed leaflets have been progressively expanded; and it now seems worth while to set down a little more fully the more important of these practical conclusions.³ It is true that few safe general rules emerge. Where human personalities are concerned, simple generalizations, however plausible they sound, are nearly always suspect. But, if there are no cut-and-dried maxims for successful billeting, much has been learnt about the best methods of discovering which billet is adapted to this type of child and which to that.

So far as children of school age are concerned, the problem of evacuation is largely the problem of finding temporary foster-homes.⁴ And this is not something altogether new. In peace-time it was carried out with increasing success by experienced social workers attached to the larger education authorities—workers whose duty it was to find foster-homes for those children who had to be removed for various reasons from their own homes. Nevertheless, the evacuation of children during war brings added difficulties of its own. In peace-time children were generally placed with carefully-chosen

¹ The survey carried out by Miss Slade and Miss Davidson was based on the scheme published in the *backward Child* (cf. (26), pp. 353-360, (27) pp. 23-6). More recently Miss John has constructed a modified version suitable for pre-school children (7).

² I should like to repeat my expression of thanks to the numerous teachers, medical officers, billeting officers and social workers who have contributed information and suggestions. More particularly, I should mention the help received from my colleague, Miss C. A. Simmins, and from present and former research students, Miss Gertrude Wagner, Miss G. Hume, Miss E. Wheeler, Miss B. M. Cast, Miss L. C. Crane, Miss M. A. Davidson, Miss I. M. Slade, Mrs. S. Anthony, Miss Chester, Mrs. Oppenheimer, and Miss Enid John. Much of their work is embodied in theses or articles cited below; and their criticisms and comments have been freely incorporated in what follows.

³ The leaflet for foster-parents is not included here, but copies may be obtained from the Psychological Department, University College, London, c/o University College, Wales, Aberystwyth.

⁴ It is perhaps most convenient to speak of the parent with whom the children are boarded as a (temporary) foster-mother. One or two writers have protested against the use of the term (12). And it is true that she must not be thought of as a mother-substitute, permanently adopting the children. For younger children she will be rather in the position of a nurse or 'nannie'; for the older, in the position of a hostess. But, if the differences between the peace-time and the war-time foster-mothers are borne in mind, the objections that have been urged against the term seem to me to be of minor importance.

foster-parents, who for the most part already had experience of boarded-out children. In war-time the billeting officer has to call upon all persons, regardless of class, creed, social position, or the like. At the outset hardly any social workers were available in the reception areas; and, during the first evacuation, the billeting officer had usually to rely upon voluntary workers; these, as it subsequently proved, carried out their work remarkably well in spite of inexperience. But just because the earlier failures were often so striking, the first results threw into clear relief the nature and main causes of the frequent maladjustments.

The general outcome of these inquiries is to show that children adapt themselves far more readily to new persons and to new environments than had generally been predicted. Where maladjustment has been noted, much the same types of causes seem to have been responsible in nearly all the areas, although, of course, each area has produced its own peculiar problems. On the whole, the increase in childish delinquency and in nervous disorder following evacuation has been unexpectedly small. Recent inquiries, indeed, reveal an increase at least as large among those who have remained behind in raided areas; so that the complaints that have become familiar in certain reception areas relate to difficulties that are by no means solely attributable to the mere fact of evacuation. Juvenile delinquency, it may be remembered, was nearly doubled during the last war (27), (28); and current inquiries show that it is once more on the increase [(6), p. 182, footnote¹].

II.—NEED FOR PRELIMINARY INFORMATION ABOUT EVACUEES.

Individual study strongly suggests that the majority of the cases in which evacuation has led to serious disturbances might probably have been avoided had fuller information been accessible about the peculiarities of the individual children themselves, and had time and facilities been available for placing them in more carefully chosen households. The first step towards successful billeting, therefore, should consist in procuring from the local education authority (or other officials) in the child's own home district a confidential list of those children who are likely to require special consideration, and, what is far more important, concrete details about their special characteristics and needs (1). Ideally this information should be cast in the form of the usual 'child guidance' report; it should give particulars about the economic and cultural status of the parents, the past history of the child, his physical, mental, temperamental, and moral characteristics. For the majority, notes in a card-index would be sufficient. The fuller reports required on special cases might be placed in the hands of the teacher accompanying the children. Children needing special attention will chiefly be (i) the physically weak, (ii) the mentally defective, (iii) the dull, (iv) the educationally backward, (v) the temperamentally unstable, (vi) the potential neurotics, (vii) the potential delinquents, (viii) those who suffer or have suffered from incontinence.

III.—NEED FOR PRELIMINARY INFORMATION ABOUT THE FOSTER-PARENTS.

As a rule, since billeting officers are dealing with households in their own neighbourhood, they are sufficiently well acquainted with the prospective foster-parents. Points that require more particularly to be noted are (i) the strength and intelligence of the foster-mother, (ii) her experience with children of the same age, sex, physique, and social

status, and, above all, whether she likes or dislikes children ; (iii) the economic social, cultural, moral, and religious status of the family ; (iv) the presence or absence of a man (husband or older son) in the household. In general, but more particularly where the children are young, the ideal foster-mother should possess much the same qualifications as the ideal children's nurse. Perhaps the most desirable qualities could be summed up in the word 'motherliness'—a rational and yet instinctive sympathy for children which will in some measure make up for the loss of a real mother. The elderly, the weak, the deaf, the lax, the childless, the unmarried spinster, the socially superior, more particularly the neurotic, and most of all those who openly declare they 'don't like children' and whose 'nerves couldn't stand the noise,' are likely to make poor foster-mothers ; but numerous instances from each of these categories could be cited where billeting has after all turned out a success. Hence the only safe basis is a judgment of the individual as such on her own particular merits (or demerits)—a judgment that can be made only by a caller of shrewd insight and experience. So far as possible, every effort should be made to secure a suitable billet at the very outset. Unless such transferences are absolutely unavoidable the billet should not be changed more than once. nothing can be worse than sending a young child into the care of a number of different strangers in quick succession (6), (7).

IV.—THE IMPORTANCE OF INDIVIDUAL DIFFERENCES.

Children require different treatment according to their age, sex, temperament, intelligence, and general social status.

(a) Age.

On the whole, it would seem to be the younger children (under eight) and the older children (over twelve) who are most openly affected. Children of the middle years are more independent, and have less firmly fixed habits and sentiments ; possibly, too, they are more successful in hiding the emotions which many undoubtedly feel. At all events, it is boys and girls from the infants' schools and those nearing puberty who need special care and watchfulness (5), (6), (7).

(i) *Aged 0-5.*—Children of pre-school age should not, as a rule, be separated from their mothers. Even if he has been successfully weaned, to separate a child of this age from his mother is likely to cause, not only immediate disturbances while he is still an infant, but more permanent emotional difficulties in later life. Greater efforts might usefully be made to send the tiniest to relatives or close friends of the family (14), (16). Investigations show that in general the small child who goes with his mother becomes still more dependent on her after evacuation ; and those youngsters who have already experienced the shocks or minor disturbances of air raids (gunfire at night) find the greatest difficulty in settling down in unfamiliar quarters (7). When mother and child are billeted together, it is important, if possible, to choose homes or apartments where the small child's crying and screaming will not disturb other inmates. Of all the cases where children have returned to their own home area, the commonest is that in which mother and baby have been billeted on a strange family unused to tiny children. The most satisfactory plan, it would seem, is to lodge them, wherever possible, in empty houses or empty wings of houses. Children of four or five attending nursery schools have sometimes been successfully evacuated with the school, where the school has removed as a

complete unit.¹ In other instances children of that age have gone with older brothers and sisters, and have settled down in the charge of a motherly foster-parent. But success in such cases would appear to be the exception rather than the rule.

(ii) *Aged 5-8*.—The younger children do best when an older brother or sister goes with them (7). It should be remembered that this is the age when children are most liable to contract infectious ailments from each other. Hence, when a whole infants' school is moved as a single unit, due precautions should be taken. In some of the poorer urban districts, where both the parents may be out working and a large family is consequently left to look after itself, the smaller children actually feel more secure if they travel with the head mistress or teacher from the infants' department on whom they have come to rely for so much thoughtful care and affection.

(iii) *Aged 8-14*.—Children over eight years should, wherever possible, move with teachers who already know them. This means that the school, or, at any rate, the form or class, should be transferred as a unit. On the whole, even older children settle down more comfortably when brothers and sisters are in the same home, or in the same group of houses or street. If this is not possible or desirable, they should still be in the company of familiar friends, preferably friends from the same school. Occasionally, it will be found, friction has already arisen (or is likely to arise in the absence of parents) among members of the same family—jealousy, bullying, teasing, feelings of inferiority, and the like; and in these rarer instances the very presence of an older brother or sister may make the problem harder instead of easier (4), (6).

(iv) *Aged eleven and upwards*.—As a general rule, with older children, to maintain the unity of the school, particularly if it is a school of a special type, seems even more important than maintaining the unity of the family; but wherever possible both should be preserved (5). The older and more intelligent certainly do well in camps or hostels, when adequate provision is made and the camp or hostel is run on the lines of a good boarding school. Usually, however, the cost of providing and running a good camp or hostel will be so much greater than the cost of billeting that such proposals must be most carefully scrutinized from every point of view before such schemes can be recommended. But again it will be wise to keep pupils from the same school together so far as possible.

(b) *Sex*.

On the whole, at any rate up to the age of about ten or eleven, the mixture of the sexes is a gain rather than the reverse. Certainly, one girl is at a disadvantage if alone in the midst of a group of boys. But, save for a few exceptional cases that have usually been anticipated by those who know the individuals, the fears entertained over the moral safety of the older girls have proved to have little foundation. A greater risk arises from

¹ The Nursery School Association has also recently acquired funds to assist local authorities to establish or build special nursery schools, or 'Emergency Nursery Centres' (as they are called), in reception areas where there is a sufficient number of evacuees of pre-school age. Fifty such centres are being, or have been, established, and the President of the Board of Education has stated that the number of approved centres will soon reach eighty or ninety. Fifteen skilled organizers have already been appointed, and are now actively at work aiding local authorities in developing the scheme. In some of the areas (e.g., Cambridge) the scheme includes clubs for the mothers, a hostel for expectant mothers and for those with large families, communal feeding centres, a residential hostel for difficult children, staffed by members of the N.S.A., with the assistance of students, boy scouts, and girls from the secondary schools. Fuller particulars of the scheme can be obtained from the Nursery School Association of Great Britain, 8, Endsleigh Gardens, W.C.1.

the passion, perhaps quite harmless in itself, that many of the older emotional girls acquire for men in uniform. In several cases brought to our notice, one bold girl, active as ring-leader, has led a number of less enterprising companions—boys as well as girls—into serious difficulties.

(c) *Intelligence.*

A highly intelligent child should not be placed with foster-parents whose intelligence is much below his own level. Although his worldly knowledge is certainly less, the average child of thirteen has already reached the same level of general intelligence as the average adult. Children from secondary schools have an intelligence well above that of the average adult; and a study of such cases shows that their ideas and outlook are characteristically grown up (5). Children already attending a particular type of school—e.g., central, secondary, or technical—should, if possible, be sent together to a district where similar provision is available.

Similarly, children attending 'special' schools for the mentally defective, the physically defective, the blind or the deaf, should be moved in school-groups, their specially trained staff going with them. If temporary residential schools cannot be established, such children will do better if housed with their own school friends or else boarded out in billets where no other children are present. Under the arrangements that evacuation is likely to entail, the presence of unfamiliar normal children in the same household is to be avoided as a general rule.

The dull and the defective need special care and sympathy. The stable high-grade defective can often be satisfactorily placed with an ordinary family, provided the family is duly warned and prepared to make allowances. For the foster-parents the best maxim in such cases is simply to treat the dull or the defective child as they would a normal child of the same *mental* age. But the older defectives, particularly those showing signs of instability, need to be boarded with persons experienced in the management of such cases or else billeted in a hostel.

(d) *Temperament.*

Peculiarities of temperament are likely to occasion far more serious difficulties than defects of intelligence. The nervous and neurotic may cause little trouble; but they need as much attention as the excitable and aggressive, who are bound to attract more notice.

The excitable aggressive youngster, full of animal spirits and out for adventure, will quickly become the centre of disturbance if placed with a foster-mother who has had no experience in coping with such children. As a rule, these children do best if placed 'in single care,' i.e., in homes where there are no other children or only older children of a more stable type. Usually pupils from the same school will be sent to the same reception area; but where a little batch of children have already formed themselves into a clique or gang for predatory purposes, the opportunity should be seized for scattering them. A note should always be sent to the billeting officer stating which children are, or are likely to become, ringleaders of such bands.

Many of the older boys need male influence in the background; the mere fact that the lad is under the eye of a motherly woman is not always sufficient. Even the younger 'miss their daddy' or big brother; and the mere presence of a grown-up man in the household may forestall numerous difficulties of discipline.

The more sensitive may need tactful handling. It may, for example, be unwise to keep reminding the child how his removal has given him a degree of personal safety which his parents, who have stayed behind, cannot enjoy. Often the dangers to his own home and his own father and mother loom more gravely in his mind than any personal danger of his own. Frank discussion of the progress of the war with children is by no means to be shunned; but discretion should be observed in referring to actual raids on the child's own home district.

(e) *Social Class.*

Of the more general causes of maladjustment, one of the commonest is the wide difference in the economic, social and cultural status of the foster-homes and the children's own homes (5), (17). In cities, in small towns, and again in the country, housing conditions are so different that a very different set of indoor habits and customs have grown up in each and have become habitual and traditional. Moreover, the differences vary not only between different types of area, but also between different social classes. Nearly every one of the earlier reports emphasizes that "it is in general unwise to attempt to billet working-class children on better-class families living in larger homes; only a minority of such families are willing to receive them; and the vast majority of the children sooner or later become very unhappy" (12), (14), (16). Each child, therefore, should be placed in a home which resembles his own as closely as possible.

In many cases, of course, this principle may be impracticable. The evacuated children come from urban areas; they have been accustomed to the excitements, the amusements, and the moral freedom characteristic of town life; and they are sent to rural areas, where customs and ethical codes are likely to be more strict and life more primitive. On the other hand, the rural foster-parents complain of the noisy, rough and dirty ways of the newcomers from the city slums; while the reactions of the town dweller bring home to the impartial observer the isolated character of country life and the deplorable lack of social services and other amenities within most rural communities. The practical corollary is clear. In general, it would be best if children from the larger cities could be sent, not to country districts, but to small towns, where the new life will not contrast too sharply with the old.

Evacuation has thrown into marked relief the fact of social stratification; but it has also revealed that these differences are far less rigid and fixed among children, at any rate up to adolescence, than they are among adults. Usually with a word of warning or explanation, the foster-parents have, on their side, proved unexpectedly adaptable. There can be no question that in many cases, indeed probably in the majority, children from the larger cities have settled down in country cottages and farms, delighted and thrilled with their novel surroundings; while children from the poorest quarters, billeted of necessity in slightly better-class homes, have in general greatly improved physically, mentally, socially, and morally.

Often, if the foster-parent is helped to understand the child's past and see the child's own point of view, most problems will settle themselves spontaneously. Usually it will be well to explain to the foster-parents how emotional stress is liable to express itself in irrational and unexpected ways. Children who are suffering from an increased sense of insecurity tend to regress to a more babyish type of behaviour, and this may manifest itself, not always by fears and tears, but by the peevishness, the noisiness, the selfishness,

the primitive greed and wayward impulsiveness so characteristic of early infancy. The child who feels the strain of removal from home most deeply may yet fail to realize the true cause of his feelings, and may show them by new and indirect symptoms, which, to the non-psychological observer, seem quite unrelated to the actual reason, and may even be mistaken, by those who do not know the child, for old or ingrained habits.

Many of the complaints arise out of trivial daily incidents—behaviour at meals, language and accent, habits in regard to washing, dressing, undressing, time of going to bed, restrictions in regard to childish games inside the home and outside (6). A reassuring word in advance about compensation for damage or dilapidation may forestall a good deal of needless anxiety on the part of the foster-parent. In most cases, however, the immediate causes of disturbance are emotional rather than real. On reviewing the complaints received, it seems possible and helpful to distinguish two types of misbehaviour—first, conduct that tends to arouse the *anger* of the foster-parent (noisiness, bad manners, late arrival for meals, mischievous curiosity, petty pilfering, and the like), and, secondly, conduct that tends to arouse the *disgust* of the foster-parent (uncleanliness, incontinence, precocious worldly knowledge, particular in regard to sexual matters). Experience shows that certain foster-parents may be far more prone to one mode of reaction than the other. There are, for example, a great many foster-mothers who, contrary to all expectation, are quite ready to accept cases of incontinence. There are others who apparently hold that a degree of cleanliness that is quite unnatural to the growing boy should rank even before godliness. Again, there are foster-parents, of a firm yet calm and tolerant temperament, who never lose their tempers, and make admirable guardians for children of the boisterous or aggressive type; there are others whose nerves are inevitably frayed and irritated by the noise and the shouting of the excitable and the young. Half the complaints will be avoided if the billeting officer takes care not to put square pegs into inappropriate holes.

V.—ARRIVAL OF EVACUEES.

Special preparation should be made for the children's arrival. A newcomer's first impressions are always the strongest. Refreshments in an attractive hall or reception room, a momentary rest after the journey, an individual greeting for each one, and other obvious little attentions, should be arranged in advance. Every effort should be made to dispel the initial fear that life in a new place is going to be strange and insecure, and that the evacuees themselves have been forced on a reluctant area, and are regarded by officials and foster-mothers alike as an unwelcome but inevitable nuisance.¹ The importance of making plans beforehand for prompt medical inspection, and for the cleaning of heads, bodies and clothes, has been sufficiently recognized; and calls for no amplification here.

If possible, provision should also be made for the teachers who are to accompany the children. The strain of their fresh duties will probably be enhanced by the fact that the ordinary lodging seldom provides any place where quiet intellectual work can be carried out, and affords few facilities for cultured intercourse. A communal workroom, and introductions to persons of similar intellectual interests, may do much to lighten the burden of their situation. Where the mothers are to arrive with the children, their adult needs should likewise be considered; communal meal services, communal laundries,

¹ Mrs. St. Loe Strachey relates how, during the confusion attendant on the arrival of a first batch of evacuees, somebody had the happy thought of pinning up a banner inscribed 'Welcome.' "We were so glad to see that, because we thought you did not really want us," said one (12).

mending clubs, sewing clubs, nursery centres, occasional concerts and the like may be organized as soon as they arrive.

VI.—VISITS OF PARENTS.

In many instances visits from the parents have proved definitely upsetting both to the children and to the foster-parents. Such disturbances could largely be avoided if their immediate causes were foreseen—e.g., if the parents were cautioned not to criticize the foster-parents, not to expect foster-parents to cater for them as well as for the children, and not to distress the children themselves with over-emotional recitals or farewells. It is more particularly the unexpected and impulsive visiting, especially in the early stages after the child's arrival, that has been responsible for much of the difficulty. Through the mediation of teachers or billeting officer, such visits might be placed on a more formal and regular basis—organized instead of haphazard. The first visit should, as a rule, be postponed until the child has had time to settle down, that is, until three or four weeks have elapsed since the day of his arrival. With these and other obvious precautions, regular visits at intervals of about once a month will usually serve to keep the children happy and contented, and to maintain friendly relations between the two families (4), (6), (11).

It is desirable that the parent shall be able (i) to see her children without the foster-parents being present or within hearing—if possible away from the billet ; (ii) to see the foster-parents without the child being present or being conspicuously sent out of hearing. A special centre might be provided where visiting parents may resort, when they do not want to intrude on or disturb the foster-mother.

Parents should be encouraged to write regularly, as well as to visit regularly, so that the children do not feel forgotten. The letters should be cheerful, and not so phrased as to distress the young recipients or increase their anxiety and homesickness.¹ The older children should be permitted to return home during vacations, especially for Christmas. Many of them are apt to attribute the deprivations due to the war solely to the conditions of evacuation ; they remember their own home as it was in peace-time, and do not realize that the black-out, the restrictions as regards food, and the like, now obtain in the home area as well. In the first year of the war there was a marked tendency, reported from several districts, for many of the children who went home during the Christmas or Easter vacation to remain home (6). But it would now seem that this was due rather to the exceptional conditions then prevailing. During the second year, it is stated, the children have come back from their 'home visits' more contented with conditions of evacuation than before.

VII.—ATTITUDE OF PARENTS.

One of the commonest sources of difficulty arises from the feelings of the child's mother, when she has not been properly prepared for the change. The study of individual cases brings home one obvious fact that has nevertheless very often been ignored : the success of evacuation is bound to turn quite as much on the attitude of the child's own parent as on that of the child's new foster-parent (1), (11). Case after case could be cited

¹ Such remarks as "The baby and I miss you terribly," "We have had a dreadful time here with the raids," "You should think yourself lucky to be away from all the horrors we have had in our street," recur time after time, and do much to upset the evacuated child. One child writes (quoted by Dr. Isaac) : "My mother says every time the door opens my pussy thinks it is me coming back, and it makes me very sad."

where the separation of the mother from her children (and often from her husband at the same time) has caused far more grief, anxiety, and nervous strain to the mother herself than to her children. This emerges most clearly in studying cases that have returned home permanently. Often the ostensible reason for fetching the child back has proved to be a mere excuse : the mother herself missed the child, and was lonely and miserable without him. In other cases, a good deal of restlessness among the children was precipitated by unwise but well-meaning actions on the part of their unhappy parents—emotional letters, visits ending in fresh tearful partings, excessive criticism of the life in the new home. Much of this may be avoided with a little forethought. In particular, both sets of parents should be warned not to express too freely their natural views on the different manners and morals, language, social customs, which they note in each other's family.

But, even when the child receives every care and comfort in his new home, child and parent alike are apt in the early stages to be paradoxically dissatisfied. The child feels there is something disloyal in being happy and contented in a new home, and in growing to love a strange person : the mother cherishes a jealous fear lest her child will be happier with a stranger than with her, and so actually hopes that the foster-home will prove less attractive than her own home. These human feelings are natural, if irrational ; when duly allowed for, they usually pass away as time goes on.

VIII.—RECREATION.

One of the greatest needs is to keep the child pleasantly and wholesomely occupied (1), (11), (14). It is urgently desirable that full-time education should be resumed by school children as soon as possible after their arrival. Where this is impracticable, and the free hours are left unoccupied, the children will almost inevitably make themselves a nuisance to their foster-parents if compelled to remain indoors, and a nuisance to others if left to their own devices in the streets or the fields.¹ In the life of the town child, cinema-going has come to play a very important part. In country districts such facilities are fewer ; and there are often sound reasons why the child can no longer go to the pictures as regularly as before. Ample provision should accordingly be arranged beforehand for occupying the leisure time of both the younger and the older children. With the younger the chief cause of unhappiness often lies in the fact that he has not been able to bring with him some bulky but dearly-loved toy—the pram for the doll, the scooter, or the bicycle, which has become an inseparable adjunct during the child's spare hours at home. Local inhabitants, if asked, will help to make good these little deficiencies, and send or lend discarded toys from their own nurseries. The older children, excited by their new surroundings, are apt to become noisy and unruly, unless suitable constructive outlets are provided to absorb their normal energies. The older girls in particular are likely to get into difficulties if the lack of social occupation leaves them at a loss for suitable companionship.

In the child's new home there should, if possible, be room and opportunity for playing, with an adequate supply of toys, play-material, and the like; outside the home the older children can take advantage of local clubs, boy scouts, girl guides, recreation fields, etc.

¹ In organizing the children's day-time activities, whether at school or elsewhere, due regard should be had to the hours of meals in the foster-homes ; if the foster-mother's own children arrive hungry from school at one hour, the evacuees at another, and the adult males perhaps at a third, the task of feeding the mixed household becomes almost insuperable. In some cases communal meals at the school or recreation centre would ease the problem.

Where the newcomers are able to join in the normal amusements of other children in the foster home, the problem will largely solve itself. The lad who is removed to his new home during the summer settles down best ; when the long and blacked-out winter evenings arrive, he will already have discovered how to occupy himself. During periods of good weather, organized games, walks, gardening, and the like, can be arranged out of doors. For periods of inclement weather, a hall or other play centre should be found where physical training, country dancing, community singing, woodwork, sewing, and the like, can be organized at regular hours.

Complaints are often made that the children decline all outside suggestions in regard to play-activities (12). It is true that the town-bred child, even more than the rural child, is apt to resent forms of amusement imposed upon him by a stranger ; such things seem too reminiscent of the injunctions of the teacher. Play scarcely seems to be play unless it is both spontaneous and free. Hence any adult proposal, however attractive in itself, is likely to be rejected at first, if the children suspect it is compulsory. After satisfying themselves by a preliminary refusal that they are really at liberty to take part or not just as they like, they will presently join in of their own accord. If sufficient tact and patience are maintained, they will, on the second or third day, adopt the very suggestions they had unanimously turned down. The ideas most commonly put to them offer (so we have noted) too little outlet for the constructive, destructive, aggressive and collective energies of the healthy child. It would be well to think out suitable activities beforehand ; digging on allotments, chopping firewood in the garden, blackberrying or fruit-picking in competition, sand-papering and painting the woodwork of the empty house which is to serve as a play centre, playing 'Indians,' 'Cowboys' or 'English and Germans' among the gorse bushes, 'treasure hunts,' 'nature hunts'—these and other pastimes can be suggested by almost any teacher who has learnt how to occupy children during a holiday in the country.

IX.—INCONTINENCE.

Perhaps the commonest cause of complaint has been incontinence, particularly bed-wetting (1), (8), (14). Foster-parents have frequently regarded this as an indication of laxity or bad upbringing, and have blamed the town parent. In many instances it has proved to be a natural symptom of home-sickness and childish anxiety, occurring perhaps a little more readily in those who are slightly unstable or neurotic by constitution.

With every child it is wise to see that the facilities in the new household are adequate, and that the child knows all about them. In a large proportion of the cases, investigation has revealed a previous history of similar trouble in the immediate or remote past. Unfortunately, the parent, fearing that her child would not be accepted, has often concealed the facts, and has sent the child away quite unprepared. Much trouble could be saved if likely cases were noted at the outset, before the children arrive in the reception area. It would be well if the billeting officer could have a supply of rubber sheets, at any rate as a temporary expedient. He should, however, realize that different cases require different measures. The treatment of incontinence is a complicated matter, and has been fully discussed elsewhere. A note giving detailed suggestions on the subject was appended to a previous article in this *Journal* (1); copies of the note as a reprinted leaflet are obtainable from the Psychological Department, University College (London), Aberystwyth. All obstinate cases should, of course, be referred for expert psychological study and treatment.

X.—ADVICE TO FOSTER-PARENTS.

As regards both the management of children generally and the handling of special difficulties, advice should be readily available for the foster-parents. At the outset of the war a simple leaflet was drawn up, intended for distribution to foster-parents who may seem to require them before the evacuees arrive. It was apparently found useful ; and in the light of subsequent experience has since been considerably revised and expanded. Copies may be obtained from the Department. In many places the local women's institute or some similar organization might be used as a means for enabling foster-mothers to come together and discuss their problems with each other and with the teachers, billeting and medical officers, in a friendly and social spirit. Arrangements should also be made for informal addresses and discussions to be given by teachers, by school medical officers, and by social workers. Special talks of this kind are broadcast from time to time over the wireless ; and the foster-parent's attention should be drawn to them, as soon as they are announced in the *Radio Times*. It is hardly necessary to add that all foster-homes should be regularly and tactfully inspected. In a few cases something more than a mere visit may be necessary to ensure that the child is adequately fed, properly clothed, generally happy, comfortable, and in good health, not nagged or overworked.

XI.—PROVISION OF PSYCHOLOGICALLY-TRAINED SOCIAL WORKERS.

In each reception area, social workers, with special training in child psychology, should be available to examine individual cases of maladjustment and to give advice or other assistance. Investigations show that such cases may largely be classified according to the categories already familiar in psychological clinics [for these, see (26)]. Consequently, experience in a child guidance clinic will be invaluable to the social worker.¹ She should have a shrewd insight into feminine nature and a sympathetic knowledge of the ways and habits of the classes with which she has to deal. She should be trained to see behind the reasons which the parents, the foster-parents, and the children are likely to offer for their complaints ; and, instead of dismissing them as irrational or fantastic, should seek to understand and modify the underlying feelings which the alleged reasons half express and half conceal. With tact and quiet patience she should try to explain the real causes—so natural when fully understood—to the other party to the quarrel. Throughout she should work in close liaison with the educational and medical department. Often, after a friendly call at the foster-home where difficulties have arisen, she will at once be able to

¹ Since the commencement of the war, several reception areas have planned or opened psychological clinics for children. The general lines on which such clinics should be organized were described in an early report to the London County Council, now reprinted in (26), Appendix II. The organization of the recently established 'child guidance clinics,' as they are now more commonly called, necessarily varies according to the needs of the district served and the staff available. They have, too, of late tended to take on a medical rather than a psychological or educational aspect—with an unfortunate bias towards treating the 'difficult child' as a diseased patient, requiring to be 'cured,' rather than as a normal child out of adjustment to his environment, requiring to be readjusted and often re-trained. Indeed, in a recent statement of the 'minimum requirements' in staffing such a clinic, the need for a psychologist is not mentioned ! Though not infrequently made by medical writers, statements claiming that 'child guidance is a branch of clinical medicine, and as such is rapidly becoming more and more exact in its knowledge' [(24), p. viii] are not only unfair to the numerous educational psychologists who initiated work in this field, but also misleading to the medical practitioners themselves : they foster the common belief that the trouble is due to some 'abnormality' or 'ailment' centred in the child himself. If anything, it is, as a rule, the environment that is 'difficult' rather than the child, and this is particularly true of maladjusted evacuees. However, it would be truer to say that in nearly every case the 'difficulty' really arises out of the interactions of the two. Hence the psychological clinic must also be a social welfare clinic.

suggest some simple solution in the light of her own experience and still more perhaps on the basis of calm, unbiased common sense. Indeed, once the aggrieved parties have unburdened themselves to some sympathetic outsider, things tend to quieten down spontaneously.

Where the difficulties or complaints are more real or more serious, the best plan is not to adopt some drastic or seemingly obvious remedy forthwith—sending the child back to his own home, changing his billet, or the like—but rather to make a detailed investigation of the case along the usual psychological lines (family history, personal history of the child, school report, a study of the child's previous and present home environment, etc.). This, of course, will entail the further assistance of a local health visitor.

Where special social workers are not obtainable, the evacuated teachers can often give much of the necessary assistance. In any case, it will be desirable for the child's own teacher to make and keep contact with the foster-home. As numerous inquiries show, when deprived of their own parents, children, whatever their age or sex, tend nowadays to turn to their teacher as the best substitute accessible. A member of the local school medical officer's staff may often be able to perform much of the routine work quite efficiently; but even so it will still be needful to rely in part on someone who knows the child's past history and the conditions of his own home.¹ When possible, all cases of exceptional difficulty should be passed on to a child guidance clinic or to a fully qualified educational psychologist.

XII.—PROVISION OF SPECIAL HOSTELS OR CAMPS.

Special hostels or camps should be established for those evacuees who, in virtue of physical, mental or social disabilities, are unfit for billeting in private houses (1). Such a measure, however, is suited only for the more exceptional cases. For the ordinary child, a normal family life in a private self-contained household is always preferable. But, where this is impracticable, a group in which all ages and both sexes are mixed is likely to yield the best substitute²; and every endeavour should be made to secure conditions approximating as closely as possible to those of natural family life.

It should be noted that the care of children in large groups is a delicate matter requiring exceptional skill and experience; but, even under the best conditions, an institution will be a poor alternative to a genuine home life.

An ideal scheme would provide accessory accommodation of three types:

- (1) *A temporary hostel* for the reception of children unsuitable for immediate billeting by reason of health, uncleanliness, etc. (estimated accommodation required, about 2 to 6 per cent of the total number of evacuees received according to the type of district from which they come).
- (2) *Permanent homes or camps* for difficult children, each housing not more than fifteen to twenty (estimated accommodation required, about 3 per cent).
- (3) *A residential observation centre* for children requiring temporary removal after they have been billeted (estimated accommodation required, about 5 per cent).

¹ A Mental Health Emergency Committee has been formed, and a regional representative is to be appointed for each of the eleven Civil Defence Regions. Information can be obtained from the Secretary of the Committee, 24, Buckingham Palace Road, S.W.1.

² A bold experiment of this kind was carried out for 'difficult' evacuees in Huntingdonshire with great success. [Cf. (14), (16)].

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THE FOLLOWING SHORT LIST OF BOOKS ON CHILD PSYCHOLOGY, JUVENILE DELINQUENCY AND ITS RELATION TO WAR, MAY ALSO BE USEFUL.

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- (24) MOODIE, W.: *The Doctor and the Difficult Child*. (New York: Commonwealth Fund. \$1.50.)
- (25) ISAACS, SUSAN: *The Nursery Years*. (Kegan Paul, 1s.)
- (26) BURT, C.: *The Subnormal Mind*. (Oxford University Press. 10s. 6d.)
- (27) ——"The Young Delinquent". (University of London Press. 17s. 6d.)
- (28) BAGOT, J. H.: *Juvenile Delinquency* (Appendix I, "Delinquency during War-time"). (J. Cape. 5s.)
- (29) MANNHEIM, H.: *War and Crime* (Part II, "The Influence of War upon Crime"). (Watts and Co. 10s. 6d.)

WHAT IS CLUMSINESS?

By T. H. PEAR

- I.—*An attempted definition.*
- II.—*Clumsiness in animals and children.*
- III.—*Social clumsiness.*
- IV.—*Clumsiness in speaking.*
- V.—*Clumsiness in industry and sport.*
- VI.—*Does clumsiness exist in the eye of the beholder?*
- VII.—*Is there a general factor of clumsiness?*
- VIII.—*The teacher's part in producing clumsiness.*
- IX.—*Types of learner.*
- X.—*Consistency and congruency in expressive movement.*
- XI.—*Clumsiness and bodily type.*
- XII.—*Skill and social status.*

I.—AN ATTEMPTED DEFINITION.

To readers who do not know many languages beside their own some words look and sound just like their meanings. To me 'clumsy' looks and sounds ill-balanced. It implies little moral censure ; it can even be used affectionately.

If after indulging in purely private speculations like these one looks up the derivation of 'clumsy' in the *New English Dictionary* interesting facts appear. It is not used by Shakespeare, who might have liked to apply it to Caliban. Its primary sense is " benumbed or stiffened with cold " ; its secondary one " acting or moving as if benumbed ; heavy and awkward in action, ungainly, unhandy, wanting in dexterity or grace." A figurative use follows ; " ill-contrived, awkward " ; as in " clumsy verse " (Dryden), " clumsy apologies " (Swift), " a clumsy forgery " (D'Israeli).

How far do other languages express all this in one word ? Are *Gaucherie*, *Ungeschicklichkeit*, *Ungewandtheit* as satisfactory ?

Clumsiness, like its sister words laziness and stupidity,¹ denotes a characteristic seldom attributed to persons one really likes—brothers excepted. There may be, too, a close relationship between clumsiness and shyness.

Can clumsiness be expressed in terms of familiar concepts, or are new ones required ? Can it be identified with absence of skill ? Occasionally clumsiness may describe absence of skilled action in circumstances where its presence would reasonably have been expected. A waiter who, in a first-class restaurant, spills soup on your clothes, or a laboratory worker who knocks an important flask off the bench, is behaving unusually and would be called clumsy by us. In these instances we are apt to suspect that some unusual condition like worry or bad temper is interfering with the exhibition of the skill which these people are supposed to possess.

Yet mere absence of skill is not clumsiness. A man who can handle a yacht and an automobile and is now being trained to fly, will be called clumsy if he fails to do something

¹Cf. T. H. PEAR: *Fitness for Work*. (1928 : University of London Press, pp. 82-110.)

which the judge expects him to have learnt. There are expert athletes whose ballroom dancing is very clumsy. One suspects, however, something behind this. The something may be unwillingness to learn, or even 'sulkiness,' the title of another chapter in the psycho-pathology of everyday life.

For practical purposes clumsiness may be described as the antithesis of skill. If we adopt this view we must define skill. I propose that it be regarded as the *integration of well-adapted muscular responses*.¹ To some, this definition may seem to exclude those important, subtle skills, tact and diplomacy. But since we can judge those only from behaviour, they fall within the definition. Their subjective components, such as preision, can only be inferred.

If this view be accepted I would suggest a description rather than a definition of clumsiness. Clumsiness is judged by a person's inability to perform an action efficiently in circumstances favouring the expectation of high ability. Some kinds, both of clumsiness and beauty, may therefore be in the eye of the beholder. Clumsiness is a biosocial phenomenon, for since the judge bases his estimate upon his own knowledge and prejudices, a person may appear clumsy to him but not to someone else.

II.—CLUMSINESS IN ANIMALS AND CHILDREN.

Such a definition may cover the clumsiness occasionally imputed to animals. Presumably bulls in china shops are called clumsy only by those who expect them to show skill in such surroundings. But the matter is not so simple as this. Professor Wolfgang Kohler in *The Mentality of Apes*² used the word 'clumsy' several times in ways which repay study. He put attractive objects—e.g., bananas, outside the animals' cages, leaving inside it things which, if it occurred to the animal to use them, might be employed as implements. When Koko drew the banana towards himself by means of a stick he often began by pushing it from the wrong side so that it would go away from, not towards, him. At another time he grasped the stick with his foot. Both these manipulations are called clumsy by Köhler.

Another ape had climbed upon a box to get a banana, fixed two metres above him. He could quite well have shoved the box right under the banana but as he pushed it along, just before his jump, the open side of the box came uppermost. He merely stepped on to the edge of it. This, of course, was less convenient as a 'take-off.' This action is called clumsy. So is another, when to reach the banana the ape piled boxes one upon the other. Sometimes, having put down a first box, he would drag up a second, carry it just to the first box, and all of a sudden hesitate, wave the second one to and fro over the first or drop it. Köhler comments that this is not behaviour like that of someone accomplishing the task clumsily, but like that of one to whom the situation does not suggest any definite lead towards the suitable action. The failure is due to lack of relevant knowledge.

He also describes "crude stupidities arising from habit, in situations which the animal ought to be able to survey." These if they occurred in humans would be called examples of clumsiness. He points out that the preceding conditions for such mistakes seem to be drowsiness, exhaustion, colds, or even excitement.

¹ Cf. T. H. PEAR: *The Nature of Skill*, Presidential Address to Section of Psychology, Report of British Association for the Advancement of Science, Glasgow Meeting, 1928.

² (London: Kegan Paul.)

It should be remembered—Professor Köhler never forgets it—that a human being has called the apes clumsy without waiting for a defence. But in all the above examples the *modus operandi* seems overt, so that his conscience is clear.

I do not know whether any animal psychologist has studied the relative degrees of skill shown by animals of the same species in their natural functions—e.g., swimming, nest-building or maternal care. Professor Köhler's demonstration that his apes showed great individual differences in solving problems (set for them, however, by a human being) suggests the value of such an inquiry.

Perhaps it is irrational to compare the skill of two species, yet once when watching a large turtle swim (certainly, to be fair to the turtle, in an aquarium), I formed the opinion that the swimming of the expert children whom I used to see daily seemed less clumsy. Man's ability to analyse complicated movements and to adapt them more perfectly to certain situations accounts for his extensive range of skills. Sometimes, as when a sea gull, dropping its fish, swoops to catch it, we marvel at the skill displayed, but it seems possible that man may occasionally have beaten the animals at their own game.

Probably we judge the skills of domestic pets too often by our own criteria, too seldom by theirs. To us very young animals often look clumsy, but as women assert and men admit under pressure, this is an adorable trait, particularly admired in puppies, lambs and foals. I have seen an audience show affectionate admiration of a baby's clumsiness in the films of Professor Arnold Gesell. Indeed, as Professor David Katz once suggested to me, the apparent clumsiness of young things may have survival-value, if it arouses protectiveness in parents or elders. Many animal mothers lose affection for and even show enmity towards offspring whose efforts at adaptation have become skilled.

III.—SOCIAL CLUMSINESS.

If this view of clumsiness be applied to co-ordinations of the coarser adjustments in work and play, clumsiness in social relationships or tactlessness may be regarded similarly.¹ It may show itself in manner of speaking, voice, posture, gesture or facial expression, but is usually a fused pattern of these activities. Here, again, the judge's impressions will be deeply coloured by his prejudices. What is friendly tact to one person may seem unwarrantable impertinence to another. In culture-patterns like our own an important ingredient of tact is the emollient phrase. Yet to select the right one, and to use it skilfully, requires intimate knowledge of the speaker's *vis-à-vis*. He may, for example, like plain speaking and see no difference between honesty and rudeness, but if he habitually makes such a distinction, as for example, in the diplomatic service, he may be harder to approach. In a country where social strata are marked off sharply, a man who imputes tactlessness may be aware of some of his own prejudices, and may suspect the presence of others, yet decline to discount them. I once saw a selection committee split in two by an applicant's easy friendliness; the minority growling that they wanted a professor, not a scoutmaster. The statement that a gentleman is never unconsciously rude suggests that even tactlessness would occasionally be recognized as a skilled action if its real motives were known.

Social skill is often entangled with the skill of the simpler muscle-groups. As a result, pastimes and sports which are not free from domestic conventions offer occasion for

¹ Cf. T. H. PEAR: *Some Sublier Skills*. *British Journal of Psychology*, 1929, October, and chapter on "Conversational Tact" in *The Psychology of Conversation*, 1939. (London: Nelson.)

social clumsiness. Dancing is one example ; tennis another. I once travelled from Vienna to London with a Continental pioneer of gliding. When I asked if the new sport required much ' nerve,' he replied that he thought not. " But," he said, " the most courageous thing I ever did was in your country, not in mine. I foot-faulted Miss X on the centre court at Wimbledon." In traditional sports like fox-hunting, it may be impossible to dissociate athletic from social skill. Memories of the solemn figure-skating of thirty years ago may influence older critics, causing them to be slightly shocked at modern exhibitions.

IV.—CLUMSINESS IN SPEAKING.

In most countries students of effective skill have neglected that very skilful form of human movement—speaking.¹ One reason may be that though few people speak excellently almost every adult who has achieved fair success at an early age forgets his childish struggles. Another is that few of our fellows care, or dare, to criticize the way in which we speak. In some respects speaking is like walking : though most of us are slovenly about it, and admit that it could be improved, we take no active steps in that direction, and would resent criticism of either.

There are different kinds of speech-clumsiness. It may be shown in ways already mentioned. At the highest levels of social intercourse, the choice of words may be bad, or the way in which they are spoken unsuited to the occasion. A speaker with perfect diction and impeccable grammar may be clumsy in this way, as when he ' talks down ' to an audience, or uses words and phrases suitable to another section of society. There is, too, the unpardonable sin in any public speaker, affectation ; in England the ' parson's voice' deserves the criticism it gets. On both sides of the Atlantic, the problems of the radio announcer's speech are well-ventilated. The insertion of ' er,' or ' and-er ' between the important words in a sentence is an infuriating example of speech-clumsiness. At a lower level there are real speech defects, like stuttering and stammering, many forms of which are curable. Yet in some social circles there is a widespread belief, articulate or not, that one ought not to speak well, especially in public. ' Glib ' is an epithet applied to a smooth performance of muscles which if it had occurred in the hand, not the mouth, would have been termed ' deft ' ; and in admiration.

V.—CLUMSINESS IN INDUSTRY AND SPORT.

It is not surprising that writers on industrial psychology—e.g., Professor Morris S. Viteles, in his *Industrial Psychology*, have told us much about the nature of skill, little about clumsiness. The noticeably clumsy worker is seldom employed long enough for his disabilities to be studied, especially in a department where serious accidents are possible.

In factory work the pupil's clumsiness may be due to his having learnt inefficient methods, movements which are not methods at all, or to deterioration of his performance since a good method was taught him. I once visited a factory where no complaint of the workers' inefficiency had been made. The plant had, however, recently been inherited by a scientist who surmised that a particular manipulative process might be improved. The foreman who had taught the workers the job maintained that, from the first lesson till the day when they did the job perfectly, a period of so long as eighteen months might elapse. Yet even a perfunctory examination showed that practically every worker had developed

¹ Cf. T. H. PEAR: *The Psychology of Effective Speaking*, 1933. (London : Kegan Paul.)

her own individual method out of the one originally taught. Perhaps they could all be called 'clumsy': certainly some were clumsier than others. Even when the method taught is as efficient as possible, deterioration is probable unless refresher courses are given.

Clumsiness may also be caused by a change in some constituent of the external situation to which adjustment is desired. Winter sports offer obvious examples. Differences between ice or snow which is soft, hard, bumpy, and smooth will render a skilled action suitable on one surface, 'clumsy' on another. Tennis players from a dry country, visiting an English tournament, once declined to play on the damp, slow grass courts, since this real lawn-tennis was quite unknown to them. Town dwellers often regard the agricultural labourer's movements as clumsy, yet the tempo necessary for his work and the conditions to which he has learnt to adapt himself are unique, as the writings of Mr. A. G. Street (e.g., *Farmer's Glory*) make clear. The 'ugly' walk may have been evolved to suit the uneven surface, and the general pace to the long hours of work.

VI.—DOES CLUMSINESS EXIST IN THE EYE OF THE BEHOLDER?

Any trustworthy judgment of clumsiness requires sympathetic appreciation of the aims of the movements. The crouching or knock-kneed postures of a ski-runner may look clumsy to anyone accustomed only to the accepted classical positions of a figure-skater, but in a winter resort one soon makes independent aesthetic judgments about these two acts. It is said that an aspirant to championship standard in one of these sports should avoid practising the other during the same period, lest interference may spoil both. It might seem that these striking variations in movement-pattern are completely explained by the different 'objective' aims of the two sports, yet there are rival styles in ski-running; also in figure-skating. A performance which pleases a devotee of the old-fashioned 'English' style of skating may seem strained, even clumsy, to a disciple of the 'international' style. Differences between the objective and the aesthetic aims of a skill offer interesting problems, insoluble by the postulate that any action which fulfils its function well is *ipso facto* beautiful. This would neglect the difference between the executive and the expressive aspects of a movement.

VII.—IS THERE A GENERAL FACTOR OF CLUMSINESS?

Though the evidence cannot be given here, a general factor is said to underlie all types of skilled performance, just as a general factor is said to suffuse all our intelligent actions.¹ This raises the interesting question: "Is there a general factor of clumsiness?" An answer would often be helpful in selecting factory workers. It seems, however, impossible to obtain at present, since clumsiness is not always due to muscular maladjustment, but may depend upon deeper-lying mental factors.

VIII.—THE TEACHER'S PART IN PRODUCING CLUMSINESS.

A pupil's slow rate of learning may cause teachers mistakenly to regard him as clumsy. Some tyros acquire a particular skill slowly because they have not been helped, or even allowed time, to visualize the new movements, and are not told why, as well as how, they should be made. Such visualizing learners are happy with printed descriptions, pictures, diagrams and films of skilled action. Without them they are bewildered or

¹ Cf. J. W. Cox: *Manual Ability*. (Cambridge University Press.)

sulky, and may unconsciously sabotage their own efforts. Other pupils may learn too slowly because, after learning the movement in their 'muscle-sense,' they are not left alone to practise the lesson and hammer it home, but are hurried on to a new task, which may obliterate the effects of its predecessor. The progress of others is retarded because they are hustled, derided or bullied by the teacher. The subtle affective relations between teacher and pupil offer problems which students of skill spectacularly neglect. Such questions can never be illuminated by investigations of animals, and seldom by the orthodox laboratory study of human beings, whose incentives to learn are usually neglected or illegitimately assumed to be maximal. Even a brief consideration of the ways in which complex skills are acquired, as in music, painting, dancing or dangerous sports, shows that the teacher's dominance is a factor extremely important and often difficult to analyse. It is well known that a pupil may resent reproof from one type of teacher, but accept, even in a queer way, enjoy it from another. A strong incentive in an adult's learning may often be the 'childish' one of pleasing, or at least not displeasing, the teacher who possesses prestige. Possibilities of psycho-analytic interpretation—e.g., in terms of transference, sadism and masochism obviously suggest themselves here. In some sports 'brutal' male instructors find a large and profitable clientele amongst women.

Those who have experienced military training, in the last war and the present one, observe a marked difference in the relations between instructors and pupils. This may be because the army has learnt from the last war and because nowadays the matters to be taught are more complex and require more intelligence and assiduity.

IX.—TYPES OF LEARNER.

Learners of skilled actions can be divided into classes, with transitional cases. Some types may be provisionally described. A pupil of Type A, after learning a complex action, 'automatizes' it almost completely. Consequently, he may be able to perform it when his attention is distracted, when he is in danger, tired, even when intoxicated. Often, however, he cannot describe his performance, analyse it, and reconstruct it to meet a new situation. He can 'reproduce' a 'visual-muscular' experience, though this verb may cover several events—e.g., selection from different memories, fusion of the last memory with similar experiences, and conventionalization or simplification. He may, however, be unable to educe relations between one particular 'muscular' memory and another which resembles it only in part. We may call him unintelligent with his muscles. Such a person is popularly described as 'instinctively' good at certain skilled performances, but the label is almost useless, even if the widest connotation be attached to instinct. It is impossible to believe, for example, that an aviator's performances could be really instinctive.

We may contrast with him a pupil of Type B, who, when he learns, seems to grasp the new movement cognitively. He wants to know not only what he is doing but why. His questions may embarrass a stupid or ignorant teacher. Often he can sketch the movement, model it, describe it, argue about it and justify it to an expert, even perhaps to an anatomist or a student of dynamics. He may become an excellent teacher, or write helpful books on the subject. He is often marvelled at by more extraverted skilled persons, who find it hard to understand his 'cognitive' or intellectual grasp of muscular experiences. Yet he never seems to retain this skill in a completely automatized form, and when faced with a dilemma requiring instant muscular choice, or when fatigued, may not be quite

trustworthy. In contrast to the 'automatizer' he might be called an 'intellectualizer.' In a performance like dancing, which is seldom dangerous, and which usually takes place in a predictable environment (where, for example, the visibility and quality of the surface are constant) the unintelligent performer may succeed with a stock of automatized habits. In the more difficult types of ski-running and mountaineering which require snowcraft and knowledge of 'reasons why' he will fail. While, therefore, the automatizer seldom looks clumsy, for what he does he does well, the intellectualizer may occasionally both look and be clumsy, for he takes too much thought, but out of this clumsiness may come a new method of dealing with the situation.

Most teachers are familiar with a type of pupil who, they suspect, does not want to learn. "He could learn," they say, "if he only gave his mind to it." To discover the reasons why he does not give his mind to the task would have instructive results. One alleged reason is 'sulkiness.' In some pupils this is caused by the teacher's negative technique of merely pointing out errors, and, if the pupil repeats them, of showing disapproval. This may stir up old complexes originating in schooldays; in fact, a suggested explanation of the adult pupil's sulkiness is that in this way he obtains revenge for earlier thraldom and pedagogic humiliation. It should be emphasized that unconscious factors of this kind are less likely to be discovered in a laboratory setting than in the gymnasium, the swimming pool, the rink or the dancing studio.

Sulkiness is connected, in a manner far from simple, with introversion and day-dreaming. When aroused by some special kind of learning it may be due to early disappointment, snubbing by teachers or by elder children, the pupil's knowledge of lofty aims never likely to be achieved by him or of high standards in the same performance set (or thought to be set) by another member of the family. Often a younger child, over-estimating the quality of an older one's performance, adopts a defeatist attitude towards its own.

Clumsiness is sometimes attributed to scholars and savants in general; for this there seems little evidence, especially to-day, when most students play games. It may be strengthened by the belief that intellectuals are not 'clever with their hands.' In some countries the clumsy professor is the subject of many affectionate jokes. Norway once boasted a national comic-strip hero in Professor Tanke,¹ who certainly behaved towards taxis, trams and telephones in unusual ways, but they were clumsy only when they arose from absent-mindedness, a privilege still left to professors in this country, but, if we accept the evidence of humorists, withdrawn long ago in America.

Introversion, shyness, day-dreaming—especially important in this era of moving-band supply and of dangerous machinery—unpracticality, inattentiveness, carelessness, laziness;² all these conditions shade into clumsiness. Yet one can seldom predict whether a person will be introverted towards any particular situation, unless one knows him well. Some 'shy' people, clumsy in many situations, especially in those involving speech, may be experts in the choice of written words, in style or even in the actual movements of writing. Their letters may radiate a charm regrettably absent from their face-to-face behaviour. Instances are common among professional writers and academic people, but 'good taste' perhaps forbids analytic approach to these problems.

Is one-sided clumsiness common? The consistency of expressive movement in one and the same person is discussed by Professor Gordon W. Allport and Dr. P. E. Vernon in their

¹PROFESSOR TANKE, 1927, Oslo, Olaf Norlis Forlag.

²Cf. T. H. PEAR: *Fitness for Work*. (London University Press.)

*Studies in Expressive Movement.*¹ To borrow an example, Ernest Newman tells us that "the uncouth insufficiency of some of Beethoven's first sketches for a musical work has its counterpart in the general shapelessness of his literary style."

Is such a judgment justified? Many believe that a person's idiosyncrasies of movement show a general consistency. Several writers, usually influenced by Freud, hold that such peculiarities cannot be regarded as isolated muscular phenomena, and proceed from complex inner dispositions. Certainly the history of many tics or 'habit-spasms' supports such a belief. Most of us at some time have bungled actions which we did not really want to carry out. The unusual breakages of china by a maid under notice is probably not a legend. An inquiry into smashes in the washing-up department of a large catering firm showed a high correlation between their frequency and the amount of bad temper among the staff at the time. It is conceivable that there is a class of persons to whom accidents happen. To discuss this would bring out the distinction between consistency and congruency. For example, it would be absurd to attribute consistent clumsiness to Beethoven, or to Schubert, who appears, however, to have been *gauche* in his love affairs; an important clumsiness which will not be discussed here.

X.—CONSISTENCY AND CONGRUENCY IN EXPRESSIVE MOVEMENT.

To grasp the difference between consistency and congruency, one must avoid confusing two distinct issues: (1) the meaning or diagnostic significance of a mode of expression (is specific clumsy action a valid indicator of some personal complex, prejudice or interest?); (2) the inter-agreement of an individual's various expressive habits (I know a person, clumsy in gait, posture and manners, unable to dance well or to learn games requiring much co-ordinated movement, but highly cultured and a beautiful writer).

Problem (1) cannot be attacked satisfactorily until some solution of (2) is available. This thought should disturb a teacher who in a school report describes in one epithet the behaviour of a pupil over a whole year, or a historian who indicates by a few epigrams the character of someone who cannot answer back.

It is necessary to discover the statistical reliability of the alleged indicators of mental qualities. The central question here, complicating all problems of human ability, disability, carefulness and carelessness, 'reliability' (in an employer's sense) and 'accident-proneness,' is "What is the amount of 'inter-agreement' between the individual's habits?" Can we, for example, assume that a chauffeur will drive his car with the same degree of care when the type of car, the illumination and road conditions, the police supervision and the personnel of his human load vary? It is claimed by many industrial psychologists that certain individuals are definitely accident-prone,² and attempts have been made to analyse the cause, but clumsiness in the sense used here does not seem to have been specially studied.

XI.—CLUMSINESS AND BODILY TYPE.

Are there people who would look clumsy to everyone acquainted with graceful persons? Dr. W. Enke³ has tried to determine if Professor Ernst Kretschmer's 'pyknic' and 'non-

¹ (New York, 1933; Macmillan.) The following paragraphs owe much to this book, which should be read in detail.

² Cf. E. FARMER and E. G. CHAMBERS: *A Study of Accident Proneness Among Motor Drivers.*—1939 Report No. 84 of Industrial Health Research Board. (H.M. Stationery Office.)

³ *Die Psychomotorik der Konstitutionstypen.*—Ztschr. f. ang. Psychol., 1930, Vol. 36, pp. 237-287.

'pyknic' types, described in *Physique and Character*,¹ are differentiated by features of their movement—whether, in fact, psycho-motor types exist.

As a result of measuring the correlations between different physical measurements, Kretschmer divides men into three physical types:² the *athletic* (with large muscles and bones), the *asthenic* (lean, flat-chested, narrow-shouldered), and the *pyknic* (with rounded contours of face and body). He believes that normal persons of the asthenic and the athletic type tend in a mild degree to have the traits of temperament and character which exist in an exaggerated form in the schizophrenic. They are apt to be 'shut-in,' relatively unsociable, and self-centred. These he calls *schizothymic*. Normal pyknics, on the other hand, tend to show in a less extreme form the alternations of mood which characterize the cyclophrenic disorder of manic-depressive insanity, usually genial and happy, but may suffer from periods of depression. These are of the *cyclothymic* type.

Enke found that pyknics are essentially slower in their movements than asthenics and athletics; in tests for freedom of movement pyknics are more irregular and variable, the athletes and asthenics more mechanical, automatized and stereotyped, asthenics and athletes find it difficult to change their personal rhythms and are slowed by distraction; pyknics, however, are adaptable to externally imposed rhythms and their action is speeded by distraction; finely co-ordinated activity is best carried out by asthenics, less well by pyknics, and least well by athletics (this suggests that the 'athletic' build is only one advantage for the modern athlete); pyknics are 'fluid,' free, soft, rounded, uninhibited in their actions, asthenics are stiff and angular; pyknics fatigue gradually, asthenics suddenly.

Enke concluded that the movements of pyknics tend to be slow, free, adaptable, uninhibited, easy-going, variable. The temperament associated with non-pyknic physique seems in contrast to express itself in movement that is hesitant, cautious, critical, stereotyped.

These results were arrived at on the basis of the inter-agreement of several tests. According to Enke, whether the typical asthenic is writing with a pen, carrying a glass of water, or reacting to music, he is found to be uniformly tense and cautious.

Allport and Vernon gave a number of muscular tests and examined their agreement of their results with each other, but while Enke had 500 subjects, they employed twenty-five. They point out, however, that Enke omitted to consider the problem of intra-individual or personal consistency. From his data it is impossible to tell whether a given asthenic possesses all, some or even none of the expressive habits discovered to be characteristic of his type.

A genetic approach to the problem of clumsiness is conceivable. In early infancy, skeletal movement is crude but unified. In babies of six months, mass-action of the gross musculature predominates over specific reflex action. The entire body, not the single limb, reaches, retracts or expresses fretfulness, expectancy or contentment. Some infants as old as one year reach with both hands when one would suffice—i.e., express the same tension with two limbs. The existence of 'temperamental' differences in the behaviour of children only a few weeks old has been shown, some are nervous, others placid and dull, some socially responsive, others socially unresponsive. We may therefore suspect

¹ (London : Kegan Paul.)

² This description is adapted from R. H. THOULESS; *General and Social Psychology*, 1937. (London. University Tutorial Press, pp. 109ff.)

the presence of certain general psycho-motor factors maintaining a 'temperamental' consistency in behaviour, during the time when increased specialization in skill is taking place.

XII.—SKILL AND SOCIAL STATUS.

To possess certain skills is a mark of financial and social status. In many countries only the rich play polo, yacht, sail and hunt. Even the democratic skills—swimming, tennis, skating and dancing—can be acquired more easily if one pays for instruction. In connection, perhaps, with this fact has grown up a convention that a person who cannot perform some skilled action fairly well restricts his public appearances. He either pays money to decrease his clumsiness, or conceals it.

All this leads to a general lack of interest in clumsy persons; a fact to be regretted. The nature of intelligence was illuminated when a few clever people became sympathetically interested in stupid ones. Human grace and charm might be increased if the skilful and tactful would study the difficulties of their less fortunate brethren.

A NEW METHOD OF MARKING ENGLISH COMPOSITIONS.

BY R. L. MORRISON AND P. E. VERNON

(*From the Department of Psychology, University of Glasgow*).

I.—Steel and Talman's method of marking compositions.

II.—Experimental procedure.

III.—Averages and ranges (dispersions) of marks.

IV.—Analysis of variance.

V.—Reliability and consistency.

VI.—Validity.

VII.—Views of examiners.

VIII.—Discussion and conclusions.

APPENDIX.—Statistical results.

I.—STEEL AND TALMAN'S METHOD OF MARKING COMPOSITIONS.

IN 1936 Dr. Steel and Mr. Talman published an account of a new method of marking English compositions which, they believe, provides a solution to this outstanding educational problem.¹ They state that : "There will be general agreement that composition ability is the ability to express oneself coherently, lucidly, and economically." And they regard any attempt to evaluate 'subject-matter' as distinct from expression, as the main source of unreliability in conventional methods of marking. "The only quality of subject-matter which can be assessed with any degree of reliability is the accuracy and the amount of information it conveys, and these must be regarded by the examiner of English composition as irrelevant to his immediate purpose. Some other qualities of the subject-matter, such as its interest or its importance, cannot be measured objectively, for what is of interest and importance to one person is not necessarily of the same interest and importance to another." Although marking should then be confined to expression, yet this allows credit to be given to certain characteristics of the ideas such as their "orderliness, imagination, humour, or wit."

For details of Steel and Talman's method, the reader should consult their monograph. The main points are as follows :

Three features of a composition are considered—

- (A) Vocabulary, choice of words and idioms.
- (B) Sentence structure.
- (C) Sentence linkings.

Columns headed A, B and C should be ruled in the margin of each essay. Opposite each word or idiom which is incorrect, which baffles or misleads, or makes what the writer has to say unintelligible, a — sign is recorded. Opposite each word or idiom which is efficient, which is "not only intelligible but also reveals what the author has to say more readily or with greater precision than if he had expressed himself otherwise," a + sign is recorded. Words or idioms which are merely sufficient and correct are not marked. Similar penalties are awarded in the B column for incoherences of sentence structure.

¹ J. H. STEEL and J. TALMAN : *The Marking of English Compositions*. (London : Nisbet, 1936.)

Credits are given for "changes in the normal order of words which secure emphasis or convenience," for interpolations or phrases "which are not merely sufficient but efficient," and so on. Sentence linkings (which are analysed at length in the monograph) are marked as bad or good under column C. Spelling and punctuation errors can, if desired, be recorded in a fourth column. These, however, are not included in the final score. The penalties and credits are then summed algebraically, and as the pupils' total scores may range from low minus to high plus, a technique is described for transferring such scores into a more conventional scale of marks, e.g., percentages. If some of the essays are very much shorter than others, a simple correction may be made for length. Many examples of the method of marking are given, by studying which teachers should readily be able to learn the method. After applying it to some half-dozen sets of essays written by 10-12 year pupils, they should be able to mark at the rate of two minutes per essay, taking somewhat longer with older pupils' products, less time with younger ones. It is further stated that the method can be taught to pupils themselves, and is valuable as a pedagogical device.

Now the claim that this new method solves the perennial problem of marking essays objectively, reliably and validly, undoubtedly demands experimental substantiation. While the present investigation was being planned, B. M. D. Cast's study was published in this *Journal*.¹ We therefore attempted to carry out our enquiry on similar lines, using similar statistical techniques. We arranged for several essays to be marked by two teams of examiners, one team using the Steel and Talman (ST) method, the other using the more conventional combination of impressionist and analytic methods (IA) which is described below. Comparisons were then made between the results with a view to answering the following questions :

- (1) Which of the two methods yields the best distributions of marks, with widest dispersion and closest approximation to normality?
- (2) Does the ST method bring about closer coincidence in the standards of different examiners than the IA method, i.e., in the average marks which they award to a set of compositions?
- (3) Are the dispersions of marks awarded by different examiners more similar?
- (4) On re-marking a set of compositions do ST examiners show better reliability?
- (5) Is the consistency of ST examiners, i.e., the correlations between their marks, superior?
- (6) Does the ST method cover all features of compositions which are worth marking, or does its neglect of subject-matter lessen the validity of the marks?
- (7) Is it true that teachers can quickly acquire the ST method, and obtain almost as great speed in using it as with the IA method?
- (8) Do teachers who have acquired the ST method approve of it, or do they find difficulties or defects in it?

II.—EXPERIMENTAL PROCEDURE.

The Compositions.—Two sets of compositions were marked by both methods. The A set was obtained from forty pupils, aged eleven to twelve years, in their first year at a Scottish secondary school. They were given a choice of subjects, viz., "A Very

¹ B. M. D. CAST : "The Efficiency of Different Methods of Marking English Compositions."—This *Journal*, 1939, IX, pp. 257-269; 1940, X, pp. 49-60.

Successful Party," " Saved from the Sea," and " I Learn to Swim." Thirty minutes were allowed for writing and five minutes for revision. This set was marked twice by all our examiners, with an interval of five weeks. The two markings are referred to below as A₁ and A₂.

The B set was a series of twenty-six compositions, written by primary school qualifying pupils (aged 11+), and published by Dr. Boyd.¹ The subject was "A Day at the Seaside." The advantage of using these essays is that the marks already awarded to them by 271 teachers are available. A slight disadvantage is that they were selected by Boyd from a much larger number of essays and represent a rather wider range of capacity than is usually found in any one primary school class. Hence the ranges of marks given to them by our examiners, and the correlations which these marks yielded, are all unusually large. This set was marked but once by our examiners, shortly after they had marked A₁.

Typed copies of the essays were distributed to the examiners, in which the original spelling, punctuation, paragraphing, and corrections were retained.

*The Examiners.*²—If, as in Cast's research, the same examiners had applied both methods of marking, their IA procedure might have been affected by their ST procedure. It was therefore essential to have two distinct teams. Each team consisted of five Scottish male teachers, and the two teams were carefully matched as to age and experience. The members of each team ranged from a student who had just completed training to the principal English teacher in a secondary school. It was hoped also to collect a team of teachers already accustomed to using the ST method. This was not possible, and it should not be necessary if, as Steel and Talman claim, the method is readily learnt. Only one member of each team possessed any previous acquaintance with the method.

In both teams the members worked entirely independently. They kept a rough record of the time they took. At the end of the experiment the ST team gave their views on, and experiences with, the ST method. The IA team also answered a questionnaire on their marking procedure.

It should be noted here that the IA method was not purely impressionistic. As Ballard³ and Vernon⁴ have pointed out, a general impression always involves a more or less vaguely formulated analysis of the qualities in an essay which are regarded as important. All the IA examiners stated, in answer to the questionnaire, that they followed a system, although such systems were rather indefinite and flexible, and no two were identical. Usually they assigned certain weights to spelling and punctuation, to grammar, and to style, and in particular emphasized subject matter, giving it anything from a third to two-thirds of the total weight. No attempt was made to impose a uniform method on these examiners; no average mark or range was specified. The only instruction was to mark the essays out of twenty in their usual way.⁵

¹ W. BOYD : *Measuring Devices in Composition, Spelling and Arithmetic*. (London : Harrap, 1924.)

² We wish to express our sincere thanks to the teachers who carried out their somewhat arduous task without a hitch.

³ P. B. BALLARD : *The New Examiner*. (University of London Press, 1923.)

⁴ P. E. VERNON : *The Measurement of Abilities*. (University of London Press, 1940.)

⁵ In view of these conditions the rather close agreement between IA examiners and their good reliability, as reported below, are particularly striking. Possibly the business of marking essays is, like many aspects of education, more highly standardized in Scotland than in most countries. Yet at the Training Centre where all the examiners were trained, no system of marking is taught. It should be mentioned that both the ST and the IA examiners had at some time had some connection with one Scottish school, either as pupils or as teachers. This may possibly have increased their consistency. But at the time of the experiment their posts were widely scattered.

III.—AVERAGES AND RANGES (DISPERSIONS) OF MARKS.

Table I shows the main features of the marks given by the different teams to the different sets of essays. Owing to the penalty and credit system the ST averages are close to zero, whereas the IA averages are, as usual, between ten and twelve out of twenty (see Table I, line 1). According to both teams the B set of essays is superior to the A set.

An important difference between the two sets of marks is that the range or dispersion of ST marks, as indicated by their S.D. (Standard Deviation) is at least twice as great as that of the IA marks (see line 3).¹ Thus these marks provide better discrimination between pupils. One would expect distributions of ST marks to approximate more closely to the desirable normal shape, owing to their greater objectivity. But inspection of the distributions reveals considerable irregularities and skewness, and application of the chi-squared test shows that they are even further removed from normality than are our IA distributions.

TABLE I.—AVERAGES AND DISPERSIONS OF MARKS.

Method of Marking	ST.			IA.		
	A ₁ .	A ₂ .	B.	A ₁ .	A ₂ .	B.
(1) Average Mark	-2.04	-2.38	+1.80	11.14	10.94	11.70
(2) Range of Averages for Different Examiners	+1.0 to -4.5	+0.2 to -5.2	+4.0 to -0.6	12.9 to 9.1	12.7 to 9.2	13.0 to 10.3
(3) Average Standard Deviation ...	5.38	5.34	7.75	2.65	2.73	3.02
(4) Range of Standard Deviations among Different Examiners ...	7.13 to 3.92	7.41 to 3.31	11.0 to 5.44	3.07 to 1.76	3.41 to 2.40	3.53 to 2.54
(5) Average Range of Marks given to same Essay by Different Examiners	8.95	9.03	8.48	4.93	4.83	3.12

We must next ask whether the average marks given by different examiners vary widely. It might appear from line 2 of the table that there is greater variability in this respect among the ST than the IA examiners. In marking A₂ essays, for example, one examiner awards an average of five more penalties (or five fewer credits) than another. The S.D. of the fifteen ST averages (i.e., five examiners marking three sets of essays) is 2.203, and the S.D. of IA averages is 1.189. But it is not fair to compare these variabilities directly, since the dispersion of ST marks is so much greater than that of IA marks. Rather we should consider the ratios of the variabilities to the dispersions of the original marks.² The ratios are 0.358 and 0.425 respectively. Actually then the IA examiners show slightly greater variability of averages, though the difference is not statistically significant.

A similar comparison may be made between the dispersions of marks awarded by different examiners. Line 4 indicates greater dispersions among the ST team. One

¹ The actual S.D. of the IA marks could, of course, be increased by marking out of, say, 100 instead of 20. But the examiners would then probably confine their marks to 100, 95, 90, 85, etc. Hence the discriminatory power of such marks would be no greater than that of marks out of 20, and would remain much less than that of ST marks.

² These ratios are, of course, 'sigma' or 'standard' scores, which are directly comparable. Cf. P. E. VERNON, *op. cit.*

examiner gives marks to the A_3 essays ranging from -19 to +10 (S.D. 7.41); another, marking the same set of essays, ranges only from +7 to -7 (S.D. 3.31). The S.D. of the fifteen S.D.'s of ST marks is 1.530, and the corresponding figure for IA marks is 0.414. These results should also be interpreted in the light of the greater dispersion of ST marks. The ratios of the S.D.'s to the S.D.'s of the original marks are 0.249 and 0.148 respectively. Here the result is unfavourable to the ST method, since its variability is still the greater. The difference, however, is only 1.9 times its S.E. (Standard Error), and is therefore hardly significant.

When comparing the marks of examiners it is usual to see how wide are the discrepancies between the marks awarded to any one essay by different examiners.¹ The average result for each set of marks is given in Table I, line 5. Apparently the discrepancies between ST examiners are twice as great as between IA examiners. But again the greater dispersion of ST marks should be taken into account. The average ratios of the discrepancies to the S.D.'s of the marks are 1.522 and 1.649 respectively. This difference is not significant.

Summarizing, the variability of ST marks appears at first sight to be greater on all counts than that of IA marks. But when allowance is made for the much greater dispersion of the former the differences almost disappear. None the less, the fact that the variability of ST marks is not appreciably smaller casts considerable doubt upon the alleged objectivity of this method. Further, there is no indication, in lines 2 and 4 of the table, of any closer agreement among the S.T. examiners when engaged on their third set of essays, A_3 , than when marking their first set, A_1 .

IV.—ANALYSIS OF VARIANCE.

The type of statistical treatment described above fails to demonstrate a definite superiority for either method of marking. Now Cast has shown that the technique of analysis of variance provides a much more delicate way of comparing examiners' marks. The details of the calculations are given in the Appendix, and Table II (like Cast's Table V) summarizes the main results. As the technique has been described previously, the following explanation should suffice.

TABLE II.—VARIANCE RATIOS.

<i>Compositions</i>	<i>A₁</i>		<i>A₂</i>		<i>B</i>	
<i>Method of Marking</i>	<i>ST.</i>	<i>IA.</i>	<i>ST.</i>	<i>IA.</i>	<i>ST.</i>	<i>IA.</i>
Variance Ratios	$\frac{V_s}{V_p}, \dots, \dots$	35.92	35.64	24.64	26.31	5.27
	$\frac{V_p}{V_t}, \dots, \dots$	14.56	10.54	11.22	9.80	22.49
	$\frac{V_t}{V_i}, \dots, \dots$	0.23	0.28	0.29	0.31	0.19
						0.26

The 200 separate marks awarded to forty essays by five examiners show a wide range of variation, or *variance*. Part of this total variation (V_s) can be ascribed to real differences in the merits of the forty pupils (V_p), and part is due to differences in the

¹ Cf. P. HARTOG and E. C. RHODES: *An Examination of Examinations*. (London: Macmillan, 1935.)

standards employed by different examiners (V_e). The remainder of the variation (V_r) represents random errors, due to discrepancies between examiners which do not already fall under V_e . It follows, then, that with a good method of marking, V_e and V_r will be relatively small, but V_p will be as large as possible. The reverse will be true if the marking system is a poor one. It is best to compare the ratios V_e/V_p , V_r/V_p , and V_e/V_r , as in Table II.

The V_p/V_r figures now show a clear superiority for the ST method, especially when applied to the B set of essays. The V_r/V_p ratios also indicate that random variations are slightly less with this than with the IA method, though the differences are small. But the V_e/V_p results are equivocal. In A_1 , variations between different ST examiners are even higher than between IA examiners, though not significantly so. Apparently ST examiners improve considerably when marking A_1 ; this suggests that there is a practice effect. But as the random variation (V_r) rises, and the discrimination between pupils (V_p) falls somewhat on this occasion, the improvement is dubious. Probably the examiners were getting rather tired of their task and were less careful with the A_1 than with the A_1 and B essays. The B set of essays was both superior in quality to the A sets, and much more heterogeneous. Thus the marks of all examiners show a rise in V_p and a decrease in V_e and V_r .

The V_p ratios are closely similar to those quoted by Cast. The V_e ratios are mostly higher for the A, but not for the B, essays. But the random variation is lower throughout because, as we shall see below, the consistency of all the marks was better than that which Cast's examiners achieved.

V.—RELIABILITY AND CONSISTENCY.

The correlation was calculated, for each examiner, between his A_1 and A_2 marks. The results are shown in Table III. All the figures are high, and there is no average

TABLE III.—RELIABILITY COEFFICIENTS OF EXAMINERS.

<i>ST Examiners.....</i>	<i>G.</i>	<i>H.</i>	<i>J.</i>	<i>K.</i>	<i>L.</i>	<i>Average.</i>
Reliability Coefficient .....	.858	.802	.903	.902	.837	.860
<i>IA Examiners.....</i>	<i>M.</i>	<i>N.</i>	<i>O.</i>	<i>P.</i>	<i>Q.</i>	<i>Average</i>
Reliability Coefficient .....	.834	.855	.781	.916	.807	.859

S.E.'s of coefficients range from $\pm .082$ to $\pm .014$.

difference between the two teams. The IA examiners are, however, more variable among themselves, whereas ST examiners are more concordant. It may be that the interval of five weeks between the markings was too short. Both teams admitted that they retained some memory of the general quality of several essays, particularly of the best and worst ones. But all examiners denied any recollection of the marks they had previously awarded.

The average inter-correlations between the marks awarded to the same essays by different examiners were calculated by Kelley's formula No. 171¹, and are shown in Table IV.

TABLE IV.—AVERAGE INTER-CORRELATIONS AMONG EXAMINERS.

<i>Compositions</i>	<i>A</i> ₁	<i>A</i> ₂	<i>B</i>	<i>Average</i>
ST Examiners .....	.794	.780	.891	.805
IA Examiners .....	.688	.652	.804	.715

Clearly there is greater coincidence among the ST examiners. The difference between the averages of .805 and .715 is found to be more than five times its S.E., according to Fisher's² χ^2 method.

Even the IA coefficients are higher than those usually reported in the literature (Cast's figure was barely .50). This confirms our suggestion that Scottish teachers are more consistent markers than most.³ The coefficient of .804 for the B essays is especially high on account of their heterogeneity. The application of the same method to Boyd's own results shows an average inter-correlation of .724 among his 271 teachers who marked these essays. None the less, the IA coefficients still imply very considerable discrepancies between examiners, and the higher results with the ST method constitute a strong point in its favour.

VI.—VALIDITY.

However reliable and consistent the ST method, it cannot hope to attain favour if it fails to measure that capacity which competent persons would designate as composition ability. One could, for example, obtain a perfectly reliable and objective measure simply by counting the number of words in each composition. But few judges would admit that mere length is a good criterion of composition ability.⁴ The reason why we used the B set of essays was because the marks already awarded to these essays by Boyd's 271 teachers would appear to provide an excellent criterion of what Scottish school teachers mean by this ability. The average correlation of the five IA sets of marks with the summed Boyd marks is .860 (range .809 to .887); the corresponding figures for the ST marks are .794 (range .752 to .829). The IA markers therefore do approximate somewhat more closely to this criterion, and their superiority is statistically significant, being 3·6 times its S.E.¹

However, the interpretation of this finding is dubious. For Steel and Talman would probably refuse to accept the criterion as adequate. They fully admit that their method of marking ignores certain features of English composition which IA markers generally try to take into account. And they claim that these features, which they call 'subject-matter,' cannot be evaluated reliably and consistently. Some light may be thrown on the matter by the application of factorial analysis to the correlations between the

¹T. L. KELLEY: *Statistical Method*. (New York: Macmillan, 1924.) That the formula is applicable is shown by comparing its results with the actual coefficients listed in the Appendix. The true averages for A_1 essays are .783 (ST) and .684 (IA), whereas Kelley's method yields the closely similar figures, .794 and .688.

²R. A. FISHER: *Statistical Methods for Research Workers*. (Edinburgh: Oliver and Boyd, 1930.)

³Cf. footnote ², page 5.

⁴It is interesting to note that Boyd (*op. cit.*) finds a rank correlation of + .69 between length of essays and his consensus of teachers' marks.

examiners. The correlations for the A₁ essays are given in the Appendix ; Table V shows the results of analysing them by Thurstone's method (without rotation of axes).

TABLE V.—FACTORIAL ANALYSIS OF EXAMINERS' MARKS.

<i>Examiner</i>	<i>General Factor.</i>	<i>Bipolar Factor.</i>	<i>Examiner.</i>	<i>General Factor.</i>	<i>Bipolar Factor.</i>
G	+ .857	- .142	M ..	+ .802	+ .281
H ..	+ .855	- .065	N ..	+ .838	+ .108
ST { I	+ .887	- .260	IA { O ..	+ .808	- .105
K ..	+ .869	- .291	P ..	+ .822	+ .395
L	+ .873	- .232	Q ..	+ .828	+ .286

The first column shows the correlation of each examiner with the general factor, i.e., the extent to which each separate examiner's marks agree with the consensus of marks of all ten examiners. The correlations for the ST examiners are all higher than for the IA examiners, and the difference is statistically significant.¹ This was to be expected since, as shown above, the ST examiners are more consistent with one another. But are there any other common factors running through the several sets of marks ? If all the IA, but none of the ST, examiners pay attention to 'subject-matter,' then the former should correlate positively with one another, over and above their correlation due to the general factor. The second column of Table V summarizes this residual overlapping² between the examiners. The bipolar factor represents some feature of the marks in which ST examiners, together with one of the IA examiners (O) are lacking, but which is found to a greater or lesser extent among the other IA examiners (M, N, P and Q).*

It is of considerable interest to compare these findings with the introspections of some of the examiners. Examiner O, whose marks approximate more closely to the ST type than to the other IA marks, says that he "places less emphasis on subject-matter than on expression. . . . Inconsistency and stupidity are taken as faults of expression. . . . Qualities such as imagination and humour are not expected by me at the qualifying stage. . . . Unity of impression, etc., are expected only in more advanced classes." By contrast P, whose bipolar factor correlation is the highest, allows eight marks out of twenty for qualities of the subject-matter. M writes of judging an essay as a music critic would judge a new piece of music, and Q notes, "I look for a quality which might as well be called imagination as anything else. This includes originality, freshness, enthusiasm. Unity of impression, balance, completeness was the deciding factor in every final judgment. When an essay combined imaginative qualities with smoothness and unity of impression it received the highest mark."

Apparently Steel and Talman are justified in their claim that the feature which their system of marking omits is rather irregularly evaluated by IA examiners, since some emphasize it strongly and others ignore it. Actually the ST markers themselves are not wholly consistent in their neglect of it, but the difference between, for example, examiners H and K is decidedly less than the difference between O and P.

¹ The S.E. is calculated here from the two sets of five coefficients, and is not obtained by the usual formula for the S.E. of a correlation, or by Fisher's z method.

² Alternatively this factor might be regarded as a group factor present in ST, but not in IA marking. However, on rotating the axes it is found that this interpretation does not yield as good a 'simple structure' as does the other.

VII.—VIEWS OF EXAMINERS.

The questionnaire answers of the ST examiners suggest that the ST method may fail to achieve wide usage largely because it is more trouble than the conventional methods. They admitted that it was easier to learn than they thought at first sight, but were doubtful if any great increase in efficiency resulted from practice. The average times required for marking the A₁ essays were four to six minutes. In marking the third set of essays (A₂) an average of four minutes was still needed. The IA markers averaged two to three minutes throughout. Only one of the ST examiners had definitely decided, as a result of his experience, to apply the method in his own work in future. It should be remembered that our examiners were not required to carry out the additional task of transferring their marks into a percentage or other scale, as teachers in school would usually have to do. Such conversion is by no means difficult, but many teachers would shy at it.

As would be expected, some of the examiners criticized the neglect of general qualities of subject-matter, and argued in favour of allowing some weight to impression. But they were more concerned with the lack of clarity and explicitness in Steel and Talman's formulation of the method. They considered that there was room for considerable personal differences in interpreting and applying their rules. (This criticism is justified by our results.) Sometimes they disagreed with the markings of the illustrative examples. In particular the penalty system did not seem to have been worked out thoroughly enough in the monograph. Hence the examiners found the marking of good essays, which received many credits and few penalties, easier than that of bad essays. All of them suggested that it was pleasant to pay as much attention to good as to bad points, since this contrasts strongly with most school marking.

VIII.—SUMMARY AND CONCLUSIONS.

(1) Three sets of essays written by 11-year-old pupils were marked by two lots of five examiners, one lot using their normal combination of impressionistic and analytic methods (IA method), the other using Steel and Talman's allegedly objective method (ST method).

(2) The ST distributions showed a commendably wide dispersion, but were no less skewed or irregular than the IA distributions.

(3) Discrepancies between the averages and ranges of marks awarded by different examiners were much the same for both methods. Nevertheless, the amount of random error in the ST marks was somewhat less, and the agreement between examiners, shown by correlation and by analysis of variance, was significantly superior to that of IA marks.

(4) The reliabilities, obtained by re-marking a set of essays, were the same for both groups of examiners.

(5) Comparison of the examiners' marks with marks previously awarded to one set of essays by a very large group of teachers, also factorial analysis of correlations between examiners, indicated that the ST examiners' marks fail to cover certain aspects of essay-writing ability. Whether these aspects are important, and whether they can be consistently evaluated by IA markers, is still open to question.

(6) The ST markers themselves expressed opinions generally unfavourable to the method on various grounds.

We may conclude that the ST method of marking is far from being completely objective. Different markers interpret its rules very differently, and though many of the discrepancies cancel out when the total marks for an essay are summed, there are still considerable divergencies between markers. Nevertheless, the bulk of our evidence does indicate greater consistency for this than for the IA method. It is noteworthy also that our IA examiners did decidedly better than has been described in many previous investigations, so that the superiority of the ST method to the general run of impressionistic or analytic marking may be much greater than we have found. For example, the consistency of our IA examiners is much larger than that reported for any of the methods of marking which Cast studied.

The effects of practice in improving both the objectivity of ST marking, and the facility with which it can be applied, are disappointing. Nevertheless, we readily admit that our ST examiners were inexperienced and that they would probably increase in efficiency if they used the method further. Certainly it is more troublesome to use, and the explanations and illustrations provided by the authors are hardly adequate. It is desirable that a further study should be carried out with teachers who are thoroughly accustomed to the method.

While we have presented fairly full data on the reliability of the method, we cannot possibly provide a complete answer to questions about its validity. By concentrating upon the efficiency with which pupils express themselves, it undoubtedly neglects certain qualities of their compositions which, to many educationists, appear important. We are dubious whether Steel and Talman's analysis of the qualities of a composition into its expression or style on the one hand, and its subject-matter on the other hand, is legitimate. Rather, we would suggest, the ST method fairly successfully evaluates good and bad grammatical details, and other elements of vocabulary and style, but ignores more general aesthetic qualities, which are admittedly intangible and difficult to assess. Some of our IA examiners succeed in assessing these fairly consistently, others do not. It is, however, most important to remember that such qualities are least likely to be manifest in the compositions of young children, and that they will grow in prominence throughout adolescence. It does not, of course, follow that their evaluation will become any less uncertain later on. But teachers and literary critics would probably regard them as increasingly important at later ages, and would consider the qualities measured by the ST method as decreasingly so. It is greatly to be hoped that an investigation similar to this may be carried out with the compositions of older secondary pupils.

APPENDIX—STATISTICAL RESULTS.

Table VI gives the results of the analysis of variance. Degrees of freedom for the A essays are four between examiners, thirty-nine between pupils, 156 for error, total 199. With the B essays degrees of freedom are four between examiners, twenty-five between pupils, 100 for error, total 129. F ratios are listed in Table II; all of them are below the 1 per cent points given in Snedecor's¹ tables.

Table VII gives the correlations between all the examiners for the A¹ essays. S.E.'s of the coefficients range from $\pm .101$ to $\pm .048$. The coefficients were first analysed by Spearman's factorial method, after being corrected for attenuation. But the partial coefficients remaining when the general factor was held constant were so large (often greater than 1.0) that Thurstone's method was then adopted.

¹ G. W. SNEDECOR: *Statistical Methods*. Ames, Ia. (Collegiate Press, 1938.)

TABLE VI.—ANALYSIS OF VARIANCE.

Essays.	Source of Variation.	ST Method.		IA Method.	
		Sum of Squares.	Mean Square.	Sum of Squares.	Mean Square.
	Examiners ..	1224.3	306.08	388.6	91.60
A ₁	Pupils	4838.2	124.06	1055.5	27.10
	Error	1330.3	8.52	401.0	2.57
	Total	7392.8	37.15	1823.1	9.17
A ₂	Examiners ..	1017.3	254.33	294.7	73.68
	Pupils	4515.0	115.77	1070.4	27.45
	Error	1609.9	10.32	437.3	2.80
	Total	7142.2	35.89	1802.4	9.06
B	Examiners ..	269.8	67.45	105.7	26.42
	Pupils	7195.8	287.68	949.4	37.98
	Error	1260.2	12.80	265.9	2.66
	Total	8745.8	66.79	1321.0	10.24

TABLE VII.—CORRELATIONS BETWEEN EXAMINERS (A₁ ESSAYS).

	ST Examiners.					IA Examiners.				
	G.	H.	J.	K.	L.	M.	N.	O.	P.	Q.
G .....	.646	.822	.826	.779	.651	.707	.671	.665	.646	
H .....	.646	.728	.813	.824	.689	.720	.643	.670	.664	
J .....	.822	.726	.834	.829	.622	.678	.776	.634	.730	
K .....	.826	.813	.834	.780	.629	.727	.711	.561	.669	
L .....	.779	.824	.829	.790	.667	.700	.715	.699	.699	
M .....	.651	.689	.622	.629	.667		.673	.563	.783	.707
N .....	.707	.720	.678	.727	.700	.673		.683	.743	.705
O .....	.671	.643	.776	.711	.715	.563	.683		.604	.680
P .....	.685	.670	.634	.561	.699	.783	.743	.604		.795
Q .....	.646	.664	.730	.669	.599	.707	.705	.680	.795	

THE EFFECTS OF EVACUATION ON THE CHILDREN.

BY WILLIAM BOYD.

- I.—*Introduction.*
- II.—*Instructions for the enquiry.*
- III.—*The children investigated.*
- IV.—*Summary of results.*
- V.—*Changes in non-evacuated children.*
- VI.—*Comparison of evacuated and non-evacuated children.*

Appendix.

I.—INTRODUCTION.

In the course of a discussion with a group of teachers about evacuation after a partial re-opening of the schools in the spring of 1940, the question was raised: "What were the most obvious effects of evacuation on the children who had returned?" There was a chorus of differing opinions, and cases were cited to justify conflicting views. Out of the conversation came a few points of agreement: that most of the evacuees looked better for their absence from town; that on the whole they were better behaved and more keen on lessons; that some of them who needed it badly had been brightened up; that in the week or two they had been back at school they had made better than ordinary progress.

It was suggested that it might be possible to estimate with some degree of definiteness by means of a personality inventory just how the children had been affected in mental outlook and tone. As it happened, these teachers had already undertaken to help in an investigation, in the course of which the parents of some of their pupils were to be interviewed with a view to ascertaining some of the facts from the parental angle and getting the parents' views on certain questions. Since they were only teaching two hours a day they were willing to add to their inquiry this extra task. When the parents came to school for the bigger inquiry it would be possible, they thought, to ask the further questions which would be necessary to find out the changes evacuation had seemed to the parents to have made in their children.

Following this I prepared a list of personal characteristics and forms of childish behaviour likely to show the influence of the evacuation experiences and issued this with notes and instructions to a number of teacher correspondents, who were in a position to make the investigation. Here is the list and the preliminary notes:

II.—INSTRUCTIONS FOR THE ENQUIRY.

"It is as important as it is difficult to get precise information regarding the effects which the evacuation experience has had on the interest, social outlook and personality of the children. It is hoped that by interviewing a number of parents whose children have been away for at least ten weeks, it may be possible to get some indications of the changes which evacuation has made in the mental outlook of the evacuees.

" It is proposed to use a kind of personality inventory for the discovery of some of the more significant changes in behaviour and attitude which may be connected with the happenings of the evacuation period. The value of the answers given to the questions set will obviously depend largely on the care taken by the correspondent to ensure that the queries are answered by some reliable person—parent, teacher, intimate friend—who has known the child before and after evacuation.

" It will add greatly to the value of the study of individual evacuees if a corresponding study can be made in each case of a schoolfellow of the same sex and approximately the same age and stage, who was not evacuated. When the completed sheets are returned, the pairs should be indicated.

" The form of the questions will vary according as the child has come back home, is still evacuated, or has never been evacuated. In the first case, the questioner might begin by saying : ' You would notice some changes in your boy when he came back from evacuation, compared with what he was before. What differences did you notice specially ? ' In the case of the child still evacuated : ' Your child must have changed a bit since he went away first. What differences did you notice specially on your recent visits ? ' With the non-evacuated child : ' The upset in schooling and the free life must have made a good deal of difference to your child. Have you noticed any change in him compared with what he was at the beginning of the war ? '

" Now I want to ask you a few questions : ' When he came back, did he look healthier, or not so well, or much the same as he was when he went away ? ' and so on. (*Underline* the one item in each line which applies best.)"¹

Looked healthier.	Not so well.
Better behaved.	Worse behaved.
Not so fussy about his food.	More fussy about food.
More cheerful.	Rather more gloomy.
Improved in speech.	Worse in speech.
Less easily frightened.	More timorous.
Fonder of playing with other children.	Less fond of child company.
Less assertive.	More self-assertive.
More self-reliant.	More dependent on parents.
Not so nervous.	Rather more nervous.
More alert.	Less active in mind.
Less quarrelsome at home.	Readier to squabble.
More obedient.	Less disciplined.
Not so excitable.	More excitable.
Better table manners.	Worse table manners.
Less finicky.	Fusses more about trifles.
More affectionate with parents.	Not so affectionate.
Not so ready to take offence.	More easily offended.
More helpful in the house.	Less helpful.
Not so shy and backward.	More shy.
More cleanly in habits.	Not so cleanly in habits.
Less easily discouraged.	Some loss of self-confidence.
Not so tense and high strung.	More tense.
Less inclined to grumble.	More grumbly.
More interested in lessons.	More indifferent about school.
Not so selfish.	More selfish.
More even tempered.	More given to tantrums.

¹ In the form issued to teachers there was a third column with the caption : " Little Change." This has been omitted here.

Effects of Evacuation on the Children

More active and energetic.	More lazy.
Tidier and more careful.	More untidy.
Less irritable.	More easily upset. ¹

III.—THE CHILDREN INVESTIGATED.

Considering the difficulty of getting in touch with the parents and the amount of work involved in the interviews during a time of school confusion, the number of forms returned was quite satisfactory. The children about whom information was received were of all ages from five to fourteen, but in view of the fact that most of the paired observations were of the older children, it was decided to confine the analysis of the data to the group between ten and fourteen. As social influences are likely to vary in depth and quality with age, there are advantages in the greater homogeneity secured by limiting attention to these years.

In all, there were included in the 10–14 group seventy who had been, or were still, evacuated (thirty-three of them boys), and forty-six children who had stayed at home, more or less schoolless (sixteen of them boys). Paired papers came from schools in Clydebank, Dundee and Glasgow, and a number of other schools in the west of Scotland were represented by two or three forms each, for the most part relating to evacuees. Within its limits the sample seems quite representative.

IV.—SUMMARY OF RESULTS.

For statistical purposes the number of children in the two sections who are reported as having become better or worse in the several items in the course of the winter's experiences, are presented in percentage form. These percentages are given in the following table, and with them combinations of percentages measuring two aspects of the changes in characteristics or behaviours which had taken place :

¹ Some questions have been raised regarding the inventory and the instructions given for its use : (1) "Are the judgments recorded those of parents or of the teachers who interviewed them?" The intention was certainly to get the parents' opinions, and in the main the opinions are the parents'. It is only in a question like that relating to lessons that the teacher may have affected the parents. But the judgment of the teacher may possibly have influenced the parents in some measure in regard to other traits. Why not? (2) "Does the emphasis on *change* in the form of the query addressed to the parents not prejudice the answers by suggesting a greater difference than actually existed?" There is little indication of this in the forms returned. Quite a considerable number record 'No Change' for all the traits, and there is an obvious discrimination in the noting of positive and negative changes throughout the forms. The emphasis on *change*, however, may have produced some confusion in certain cases—e.g., in regard to improvement in speech, which is noted rather surprisingly as having taken place in a third of the children evacuated. The parents may possibly have failed to distinguish between change and improvement! (3) "Does the regularity with which traits mainly positive occur in the first column of the inventory not lead to a routine type of response?" Actually the parents did not seem to be aware of this regularity of presentation, probably because the varied form of the items discouraged stereotyped thinking. (4) "Is the connotation of the items indicated with sufficient definiteness by the contrasted wording in the first and second columns?" The results suggest an affirmative answer. The only item about which there seemed to be much cross-thinking was assertiveness.

	<i>Evacuees.</i>		<i>Non-Evacuees.</i>		<i>B-W.</i>	$(B-W) - (b-w)$
	<i>B.</i>	<i>w.</i>	<i>b.</i>	<i>w.</i>		
Health	63	11	15	7	52	43
Self-reliance	46	1	17	2	44	29
Affection for parents	46	3	7	0	43	36
Helpfulness in home	43	3	39	6	40	6
Interest in lessons	41	7	63	4	34	-24
Alertness	40	1	20	15	39	34
Speech	33	9	0	26	24	50
Less fuss about food	31	3	0	0	29	29
Child companionship	30	6	15	4	24	18
Activity	27	4	26	4	23	1
Table manners	27	9	4	0	19	14
Cheerfulness	27	10	7	7	17	17
Tidiness	26	3	7	0	23	16
Less shyness	23	1	9	7	21	19
Good behaviour	21	6	7	20	16	29
Nervous stability	21	11	13	4	10	1
Obedience	18	7	4	33	12	40
Cleanliness	17	1	9	0	16	7
Less worry about trifles	17	3	4	7	14	16
Assertiveness	17	6	20	2	11	- 6
Self-confidence	16	3	11	11	13	13
Even temper	14	8	4	7	9	11
Less quarrelling	13	7	4	20	6	21
Non-excitability	13	9	4	7	4	6
Less fear	13	11	13	2	1	- 9
Relaxation of tension	11	7	9	2	4	- 2
Avoidance of offence	11	11	2	15	0	13
Less grumbling	10	4	4	13	6	14
Unselfishness	10	6	0	0	4	4
Non-irritability	7	9	4	7	- 2	1

B = The percentage of the seventy evacuees who improved.

W = The percentage who deteriorated

b = The percentage who improved of the forty-six children who stayed at home.

w = The percentage who deteriorated.

The simplest measure of the changes in personality and conduct due to evacuation is given by the percentage of the children evacuated who improved in the several items, less the percentage of those who deteriorated (B-W). This does not take any account of the changes which come in the ordinary course of growth, but seeing that the period of evacuation for most of the children did not greatly exceed three months, that is not an important factor.

If the thirty items relating to the evacuee group be ranked on this basis and divided into three equal sets of ten, the general difference between the items occurring most frequently and those occurring least frequently becomes evident. In the top set, with the percentage frequency ranging from 51·6 to 22·9 and the Standard Error from 6·0 to 5·0, the characteristics included (in descending order) are : *health, self-reliance, affection for parents, helpfulness in the home, alertness, interest in lessons, good speech, less fuss about food, child companionship, activity*. In the bottom set, with percentage frequency from 10 to -2, and the Standard Error at the highest 3·6 and becoming smaller towards the foot of the list, the characteristics include : *nervous stability, even temper, less quarrelling, less grumbling, non-excitability, relaxation of tension, unselfishness, less fear, less readiness to take offence, and non-irritability*. The greatest gain, it will be seen, is in socially desirable conduct and in the personal characteristics which make for strength of character. The change of life has had least effect on the temperamental qualities connected with emotional

stability. In some of these the number showing deterioration is as great as that showing improvement, and in all of them the proportion of deterioration is greater than in the other items on the list.

V.—CHANGES IN NON-EVACUATED CHILDREN

It is interesting to compare the figures for the stay-at-home section with those of the evacuees. There are two points to be noted here. The first is that there is considerably less change in those who did not go away. Except in one or two items, the percentages of frequency in their case are much lower, and the number of items which are statistically significant is much smaller. The second is that whereas the changes in the case of the evacuees with one trifling exception are all in a positive direction, there are several items here in which the number showing deterioration exceeds that showing improvement. The percentage of those taking a greater interest in lessons and of those not troubled with fears, on the other hand, is greater in those at home; and that of children helpful at home and children specially active and self-assertive is much the same as in the evacuation section. The two outstanding deteriorations noted by parents and teachers are in speech and in discipline, with lesser weaknesses in general behaviour, quarrelsomeness and readiness to take offence. All this is very much what might be expected. The non-evacuated children were running about freely most of the time, without the school occupations and restraints. In these circumstances they tended to become active, self-reliant, self-assertive, companionable, ready to give help at home, and after a time anxious for lessons; and on the negative side they became worse in speech and behaviour, and to a less degree in temperamental traits like grumbling and quarrelsomeness. The picture is quite consistent.

VI.—COMPARISON BETWEEN EVACUATED AND NON-EVACUATED CHILDREN.

Further light may be thrown on the personal changes connected with evacuation by bringing together the two sets of data, and considering the changes which may be presumed to be the outcome of the evacuation situation in relation to the changes recorded for the home group. Some of these changes, it will be seen, are largely confined to those who were evacuated; others are common to the two groups. Some show similar tendencies with different emphasis in the two cases, others show tendencies in the opposite direction. In each item there are four facts involved: improvement or deterioration connected with evacuation, improvement or deterioration connected with staying at home; and the four are obviously related. The simplest measure of relative change is given by subtracting the composite score for the home group ($b-w$) from the corresponding score for the other group ($B-W$), thus getting as an indication of opposing tendencies $B+w$ and $b+W$.¹ With this measure of contrast the greatest relative change is in the items in which

¹ The formulae here employed are based on the consideration that where changes of a positive and a negative character in behaviour or attitude, such as those with which we are now concerned, have to be taken into account, the effective change in any case can be measured as a difference of the amounts (or percentages) of the two opposite characters. If, for example, thirteen out of the seventy evacuees seemed to their parents to have become more obedient, and five to have become less obedient, eight (in percentage eleven) may be taken as a measure of the change. But the situation is complicated by the fact that there is also a group of non-evacuees. If the positive and negative characters appear in them it is obviously not due to evacuation, and for a comparative estimate there must be a proportionate deduction from the figures relating to the evacuees. Five of the non-evacuees were adjudged more obedient and fifteen less obedient. These numbers, made comparable by expression as percentages, have to be set off against those for the evacuees. This is done by the formula $(B-W)-(b-w)$. The standard error for the difference of the differences is given by:

$$\sqrt{\frac{B(100-B)}{70} + \frac{W(100-W)}{46} + \frac{b(100-b)}{46} + \frac{w(100-w)}{15}}$$

marked improvement in the evacuee group is combined with marked deterioration in the home group, as for example, in the case of general behaviour where B and W (the percentages for the evacuees) are 21·4 and 5·7 respectively, and b and w (the percentages for the others) are 6·5 and 19·6, probably connected with the fact that the one group were under school discipline and the other not. Contrariwise, the least significant changes are in the items in which there is a large counterbalance of deterioration in the evacuees and of improvement in the non-evacuees as in the case of nervousness, where B and W are 21·4 and 11·4 respectively, and b and w are 13·0 and 4·4.

When the thirty items are rearranged on this new basis some differences from the order suggested by the evacuation figures alone emerge: classifying them in accordance with percentage frequency and standard error four groups are to be distinguished:

- (a) Significant items (percentage differences ranging from 50·3 to 29·1, more than three times the standard error of the difference: *good speech, health, obedience, affection for parents, alertness, good behaviour, less fuss about food, self-reliance*).
- (b) Near significant items (percentage differences from 20·9 to 14·3, from three to two times the standard error). *less quarrelsome ness, less shyness, cheerfulness, tidiness, less worry about trifles, good table manners, less grumbling*.
- (c) Items of least significance (percentage differences from 13·4 to 6). *child companionship, self-confidence, less readiness to take offence, even temper, cleanliness, helpfulness in the home, non-excitability, unselfishness, activity, nervous stability, non-irritability*.
- (d) Negative items (percentage from -2·2 to -24·4): *relaxation of tension, assertiveness, less fear, interest in lessons*.

Consideration of the significant or near-significant items shows that there are four main situations involved:

- (a) *Speech, obedience, good behaviour, less quarrelling, less grumbling*. In these, there is considerable improvement away and considerable deterioration at home.
- (b) *Health, self-reliance*. Here there is a definite superiority of improvement over deterioration both among evacuees and children who remained at home, but greater in the evacuation than in the home group.
- (c) *Affection for parents, less fuss about food, good table manners, tidiness*. Improvement in these traits is almost wholly confined to evacuees.
- (d) *Alertness, cheerfulness, less shyness, less worry about trifles*. In these, there is a definite superiority of improvement away, while improvement and deterioration are equally marked at home.

The most common type among the items as a whole is that in which there is a similar tendency away and at home. Specially interesting in this respect are the three negative cases: *interest in lessons, less fear, and assertiveness* (of which the first is near-significant). These are more characteristic of the home children than of the others, and the reason is obvious. The children who were evacuated were getting lessons and therefore less keen on them. The children who were at home were more secure and therefore less liable to emotional disturbance; and assertiveness like disobedience and misbehaviour was the product of the too free life of the unevacuated child.

The noteworthy fact is that over all there is much the same order of significance on the second computation as on the first. Some few of the qualities which ranked high

when only the evacuee group were considered—like activity and home-helpfulness—have come down on comparison, because they were almost as well developed in the one lot of children as in the other; and some, like obedience and good behaviour, have risen for the opposite reason. At the other end of the scale, some forms of emotionally conditioned behaviour, like quarrelling, grumbling and readiness to take offence, show up rather better in the evacuees when seen in contrast with their manifestation in the non-evacuees. But the generalization still stands, that on the whole, evacuation in the case of the children who stayed away long enough to be affected by it, has brought about an appreciable improvement in socially desirable conduct and a firming up of personal character, but that apart from a slight increase in timorousness, it has left unaffected the emotional life of the children.

APPENDIX.

The last general conclusion is so much at variance with that reached by some other observers that there is need for a check up on the figures by a tabulation of the values of χ^2 for the several characteristics. Here are the items in descending order of significance, and the probability that the changes indicated may be due to the random effects of sampling:

(1) *Significant*:

- (a) P. (Fisher) above .001 level.

Health ($\chi^2=33.83$) ; Affection for Parents (22.06) ; Speech (21.53) ; Obedience (14.97) ; Table Manners (14.08)

- (b) P. above .01 level.

Alertness (12.94) ; Less Fuss about Food (10.91) ; Self-reliance (10.28) ; Cheerfulness (9.63) ; Good Behaviour (9.00) ; Tidiness (8.66).

(2) *Near-Significant*.

- P. above .1 level.

Unselfishness (7.16) ; Less Worry about Trifles (5.91) ; Interest in Lessons (5.40) ; Less Shyness (4.50) ; Fear (4.29) ; Less Quarrelling (4.24).

(3) *Least Significant*.

- P. below .1 level.

Less Grumbling (3.65) ; Avoidance of Offence (3.50) ; Nervous Stability (3.25) ; Self-confidence (2.84) ; Even Temper (2.60) ; Non-excitability (2.41) ; Child Companionship (1.72) ; Cleanliness (1.43) ; Tension (1.17) ; Non-irritability (0.85) ; Assertiveness (0.78) ; Home Helpfulness (0) ; Activity (0).

These figures, it will be seen, go to confirm and even to strengthen the conclusion already reached. All the traits previously shown to be significant are to be found in the top group of the new classification and the additional traits which pass from the Near Significant category into the Significant (Cheerfulness, Tidiness, Table Manners) increase the list of qualities indicative of the personal and social uplift which this inquiry seems to prove to be the main effect of evacuation, so far as the children are concerned.

EDITORIAL NOTE ON EVACUATION INVESTIGATIONS.

AN editorial note on the reports published in this *Journal* about evacuated children may be of service to readers, especially as Dr. Boyd's results may seem at variance with those of some other investigators. It is to be expected that differences will appear according to (a) the good or bad choice of billets and foster-mothers ; and (b) the poverty or bad discipline of the homes from which the children are evacuated. For these reasons it seems useful to publish reports from as many different areas as possible. Thus two investigators who found very little home-sickness and anxiety among the hundred evacuated children studied, and, indeed, few neurotic symptoms at all, attribute this to the fact that the head mistress seemed 'an excellent mother substitute.'¹ On the other hand, Professor Burt found among 137 evacuees, as contrasted with a sample population before evacuation, an increase in anxiety states and especially an increase in bed-wetting.² Dr. Burt suggests that this latter was "in many cases, if not most, not a habit but a new manifestation" which in several instances was "known to cease immediately the child returned home to its parents." Now it is most important in comparing results to note that Dr. Boyd's investigation refers to the children *after their return home*, when we might expect many minor maladjustments, due to evacuation and perhaps mere absence from home, to disappear. Also, there is nothing inconsistent between a number of children (twenty-one out of seventy evacuees) being improved in nervous stability—as Dr. Boyd found, and yet the number who became definitely worse in this respect also being substantial (eleven out of seventy), just as some neurotics seem to be almost cured by war conditions while some are made worse.

Further, though some of Dr. Boyd's improvements may only appear on the return home of the children, it may fairly be claimed by him that these improvements on that return imply evacuation experience as a precondition.

The complexity of this whole question of evacuation is so great that the editor will welcome further reports even if they seem to cover largely the same ground as those of previous investigators. Special attention should be paid to one important point : it is likely that the children who are most upset by evacuation will be those who first return to their homes, so that those remaining when an investigation takes place are a partially selected group. Thus in the Cambridge enquiry³ the percentage of unsuccessful adaptation was only half that found by Davidson and Slade among their evacuees in Wales ; but these latter authors point out (*op. cit.*, p. 188) that the Cambridge survey took place after an interval, from the date of evacuation, one month or more greater than the interval in the Welsh investigation, so that more of the ill-adapted children would have gone home from Cambridge.

In addition, of course, there are great possibilities of different judgments as to what are 'successful adjustments' ; and sometimes it may be difficult to discriminate between (a) the effects of mere evacuation and (b) the effects of general war conditions.⁴

¹ See DAVIDSON, M. A., and SLADE, I. M. : "Results of a Survey of Senior School Children."—This *Journal*, Vol. X, Part III, November, 1940, p. 193.

² See his article, "The Incidence of Neurotic Symptoms among Evacuated School Children."—This *Journal*, Vol. X, Part I, February, 1940, pp. 9 and 10.

³ See STRAKER, A., and THOULESS, R. H. : "Preliminary Results of Cambridge Survey of Evacuated Children."—This *Journal*, Vol. X, Part II, June, 1940.

⁴ On this point see MAGDALEN D. VERNON'S article, "A Study of Some Effects of Evacuation on Adolescent Girls."—This *Journal*, Vol. X, Part II, 1940, p. 130.

EDUCATIONAL PSYCHOLOGY, AMERICAN AND BRITISH: SOME POINTS OF COMPARISON.

By R. L. ARCHER.

- I.—*National differences as regards contents.*
- II.—*National differences as regards exposition.*

WITH the Editor's encouragement I am taking the opportunity (given by his request for a critical notice of Professor Judd's recent book¹) to compare American and British attitudes to educational psychology, with this new volume especially in mind.

The book is largely a re-handling of topics which the author some years ago treated in his *Psychology of the High School Subjects*. It is a text-book in the sense that it does not profess to present new information or new views and that it can be read by anyone without previous acquaintance with the subject ; but it has a well-marked point of view, which is distinctively American. The writer has set clearly before his mind the attitudes which he thinks it desirable for the future teacher to acquire as well as the knowledge of psychological facts which he believes will help him in his everyday work. He does not expect him to become a researcher, or, in any technical sense, a trained psychologist. The first seven chapters set out his general point of view : they are intended to present the teacher with an evolutionary or biological conception of psychology as a subject which primarily traces the adaptation of mental processes to environmental needs. The next sixteen chapters, which constitute more than half the book, deal with the separate subjects in the curriculum, showing what contributions psychology has to offer to the teaching of each. The last six deal with special questions, and are interesting to British readers as showing how far the characteristic views of the two countries on several important matters are approximating to one another.

It is somewhat remarkable that we never know, when we open a new text-book of educational psychology, what subject-matter it is likely to contain, or how that matter is likely to be arranged. This variety is entirely opposed to the uniformity which we have learned to expect in text-books of the physical sciences. These are all so much alike in contents, order and treatment that the educationist suspects the deadening hand of examinations of having fifty years ago turned them into stone. But, apart from the individual differences between text-books of educational psychology, we also note national differences, which, as regards contents at least, do not exist in the physical sciences.

I.—NATIONAL DIFFERENCES AS REGARDS CONTENTS.

Till the rise of totalitarianism there were practically no national barriers in the physical sciences², in whatever country a new discovery was made or a new theory put forward, it was incorporated into the thought of the whole Western World. It was the same with views about the human mind in the old days before what is now psychology

¹CHARLES H. JUDD : *Educational Psychology*. (Riverside Press, Cambridge, Mass., and George Allen and Unwin, pp. 556, 18s.)

²The German attitude to Einstein shows that this is no longer wholly true : and it is necessary only to read Lenard's *Great Men of Science* to see that there is now an Aryan history of scientific progress³

was differentiated from philosophy. Bacon, Descartes, Locke, Kant, Herbert Spencer, even Bergson—the philosophers who influenced educated opinion generally, as distinct from those whose work tended to make philosophy an academic speciality¹—were world forces. But it has not been so with psychology: there is no difference in this respect between educational psychology and general psychology. Indeed, it has not been so with the social sciences generally. And it is not difficult to see the reason. Philosophy had always existed; the social sciences have mostly arisen since the French Revolution. The dynastic struggles of the eighteenth century did not affect the solidarity of European civilization: the ideological struggles which began with the French Revolution slowly drove a wedge into that solidarity. Psychology originated about 1870, so late that it did not develop under conditions of unity; other social sciences which were a little older had not enough unity to resist the disintegrating process, whereas a two-centuries' tradition of internationalism in physical science resisted the disruptive forces till the high explosive of Nazism was applied.

The result in Great Britain was most curious: it was to hinder the growth of psychology altogether. We call it curious, because the English philosophic tradition of Locke and the Scottish common-sense tradition would naturally lead us to expect that British philosophers would have turned avidly to psychology, and the extra-academic efforts of Herbert Spencer indicated a preliminary stirring of the waters indicative of such a movement. The lead which Darwin was giving the world in biology might have suggested the form which a typically English psychology would take. But, in point of fact, the British universities set themselves actively against psychology. Looking back, it is easy to see that it was part of an ideological struggle. I am not without sympathy for their motives. Socially the Greek view that the cause of a thing is to be found in what it becomes in its perfected form rather than in its origin is most important. The fact that man's mind is now more angelic than simian and is capable of becoming even more so was to them more important than that in origin it was simian. The academic attitude was no mere traditional clinging to the traditional, it looked to the future. A psychology which took shape under the first influence of Darwinism would certainly have been one-sided, and the side emphasized would not have been that which produced social idealism. But the remedy which they applied was unfortunate. Instead of seeking to establish a psychology of the human mind as it now is, they introduced into Britain the transcendental Hegelian philosophy, which was becoming obsolete in the country of its origin, which was entirely detached from psychology, and which was alien to the whole trend of British philosophy from Locke onwards. They failed to see that Hegelianism does not tend to preserve the value of the individual human being, which is the basis of British ideology, but to throw up a smoke-screen under cover of which was rendered possible that return to tribalism through the personification of the state which Nazism is now seeking to achieve.

But it is time to return to the national differences in psychology in the countries where it took root. Psychology emerged in Germany almost as an off-shoot of physiology, and it has always retained in that country traces of its origin. In France human action as the result of emotion, even irrational action, is perhaps the chief interest: one feels

¹ I am thinking particularly of Spinoza, Berkeley and Hegel. Philosophers who do not appeal even to the academic world outside the body of teachers of philosophy win their way in foreign countries chiefly through individual interpreters in their countries

that Binet's studies in suggestion were less likely to have been undertaken in any other country and that Rousseau is the true ancestor of French psychology. America, which was dependent at first on European thought but not on the thought of any particular country, began by being eclectic; but it soon, under the influence of William James, developed a line which was in accord both with the 'practical' bent of American intellectual activity and with the biological outlook which we have suggested the English mind would have taken but for circumstances: behaviourism is only the extreme form of these two tendencies. When Britain at last took up psychology is it fanciful to see both in Spearman's analysis of human intellect or in MacDougall's analysis of human conation an approach to psychology which John Locke, were he alive to-day, might have pursued? Would it be too sweeping to say that the characteristic German psychology tends to think of mental activity as the result of impressions acting on nerves, the French as the result of emotion, the American as the result of biological adaptations to environment, and the British as the result of innate forces which call for the same kind of analysis as dynamics applies to physical forces?

In any case, psychologies to-day seem to have national frontiers. The configuration psychology is nowhere really powerful except in Germany. Freudianism is taboo in its own country, though it has become almost a cult in some others. Behaviourism is largely confined to America.

Educational psychology has shown equally marked national differences. Forty years ago it was represented by Meumann in Germany and by Stanley Hall in America: in England the only views which attracted much notice were those of a small band of enthusiasts who were striving to introduce the interpretation which Rein at Jena was placing on the psychology of Herbart. Since then we have become much more conscious of American thought, but we have been always aware of considerable differences; we have been suspicious of the questionnaire, critical of Thorndike's atomism, distrustful of 'child study,' and, above all, uneasy about the practical applications to which American psychology appeared to be leading. If Judd may be taken as representative of the most recent trends in the United States, it is interesting to detect in this book a growing approximation of view-point. It is noticeable in regard to practically all the matters which we had come to regard as specially characteristic of American educational psychology.

(a) *Child study.*

I mention this first because Professor Judd regards the methods and conclusions of Stanley Hall and his contemporaries as totally obsolete. Their use of the questionnaire he regards as unscientific and the conclusions reached by its use as largely predetermined by the form of the questions.

(b) *Behaviourism.*

In appearance Judd conforms to the American view of stimulus-reaction by interpreting all mental activity as directed to muscular movement and its biological value as depending on the movements which it produces. But he is far from being a behaviourist, and regards behaviourism as a somewhat eccentric exaggeration of a truth. He appears to sympathize with James's theory of the emotions, but he regards the tendency to interpret the action of the cerebrum on the analogy of the lower brain centres and the spinal cord as an indefensible use of analogy.

(c) Transfer of habit.

His views on this matter may surprise the British reader most. It is true that he considers Thorndike to have proved his case against the possibility of transfer in regard to *habits* as habits are understood in America, but regards the conclusion as quite unimportant, since it does not affect *attitudes*, which are the primary concern of the educator. These emotional and conational attitudes are indefinitely transferable, though it depends on the total make-up of the individual to what they are transferred. He still seems to deny that the formation of these attitudes is dependent on what subjects are studied : it is entirely a matter of the modes of study which are adopted. In a kind of negative way British opinion would admit this : there are many methods of studying any subject which could produce no beneficial result on attitudes. But, positively, it would insist that some subjects have possibilities in this respect which are greater than those of others. For instance, if economics were studied at the age of sixteen it would probably produce an attitude of wooliness ; whereas a four-years' study of the physical sciences from that age by good methods might well produce an attitude of demanding to know the precise meaning of each statement and the evidence for it, which would prove transferable to economics and would save the student from the wooliness into which he otherwise would have fallen. If so, the study of Subject A is of more use to Subject B than the study of Subject B would have been ; and this is exactly what Thorndike was supposed to have shown to be impossible. It would be interesting to know what Professor Judd would have to say about this case.

(d) Vocationalism.

It is noticeable that while Judd maintains in theory the accepted American view that vocational subjects can have as great an all-round educative value as the traditional subjects, his chapter shows that he has in mind those vocations which are based on sciences, such as engineering and agriculture. It is a little astonishing to find that there is still any need to argue the case for these subjects in the United States ; for, even in this country, the time is past when theology, law and medicine were the only vocational subjects considered worthy of university study. Surely the views of Dewey went far beyond this : indeed, in this country we should admit that, though handwork could not supply the same attitudes as the more intellectual subjects, it can supply others which are necessary to an all-round human being.

The total result of these observations is that if Professor Judd is at all representative of present-day American opinion on educational matters, the difference between the United States and Great Britain is coming to be one of wording rather than a real difference of thought.

II.—NATIONAL DIFFERENCES AS REGARDS EXPOSITION.

Text-books of educational psychology differ as much in regard to their arrangement as they do in regard to their contents. If we try hard, we may detect types, but their delimitation is not easy. In this country perhaps the two commonest are : (1) those which are arranged on the general basis of the ordinary text-book of analytic psychology but point out educational applications under each heading, and (2) those which confine themselves to the additions which have been made to psychology in comparatively recent times and are thus able to give considerable space to a limited number of topics. In

America a book bearing the title of *Educational Psychology* is more likely to be either (3) a guide to laboratory investigations, giving a summary and bibliography, or (4) a book arranged according to the main subjects in the curriculum, such as that which we are reviewing. We suspect that the British academic mind is inclined to think of books so arranged as scrappy and unscientific; in short, as attempts to enable a student to use psychology without knowing psychology. It is worth while therefore to consider the case in their favour.

It cannot be denied that educational psychology has been very long in 'catching on' with teachers in this country, and it may be that the method of presentation adopted by text-books is partly the cause. Of course, this is not the sole reason. It is partly the outcome of our curious belief that, in everything which we undertake, we shall muddle through successfully somehow. As a nation we hate theory. We are confirmed empiricists. But we have had many great head masters and head mistresses who thought before they acted rather than afterwards, who had quite a clear idea of the kind of pupil whom they wished to produce and on the whole succeeded in producing that type of pupil. Yet hardly any of these head masters and only a minority of the head mistresses ever read a psychology book. It is easy to blame them for not realizing that a true theory must in the long run aid practice. Unfortunately, both the ordinary American and the ordinary Englishman (it is probably less true of the Scotsman) wants something which is applicable obviously and immediately. The student in an English training college does not see that psychology satisfies this criterion. We are inclined to think that the American student would feel differently towards a book arranged according to subjects in the curriculum.

May I quote my own case in this matter of motivation? In my undergraduate days we had never heard of such a thing as educational psychology. But my philosophy tutor—happily not a Hegelian—suggested that there was such a subject as psychology, and that in the future it might affect philosophical thought more than it had done hitherto, and, at any rate, it could do no harm to read James's text-book. Of course, James's text-book proved most interesting reading; everyone knows that he "wrote psychology as if he were writing a novel." But, when I reached the chapter on memory and James's proof that learning masses of poetry by heart does not enable us to learn by heart more easily, I saw at once that here was an educational conclusion of first-rate importance to practice; and the circumstances attending my first discovery that psychology had a bearing on education fixed my attitude to educational psychology before I knew that it existed.

Not that a number of isolated 'tips' is the best that educational psychology has to give. The demand that it should present a kind of educational philosophy is right. But we are not born philosophers, we are not even born wishful to become philosophers. The most we can say is that we are born capable under favourable conditions of becoming philosophers. Before Nature produced philosophers she had first to train the race in thought about the means of improving flint tools; and it should not be beneath our academic dignity to produce philosophers by first exciting their interest in the improvement of teaching devices. A device always has behind it a principle, and the principle has behind it a system of related principles.

The arrangement, however, under chapters dealing with separate subjects in the curriculum has its difficulties. The reader of Judd's book will not be long in seeing the great differences in the help which laboratory psychology can give to different subjects.

This is equally noticeable if one reads Wheat's two books on the teaching of reading and on the teaching of arithmetic. Direct laboratory experiment was necessary in the first instance to get to a true theory of reading, and, whenever a child experiences an unusual difficulty in learning to read, it is necessary again in order to discover the cause and the remedy. No amount of direct observation of children learning to read in the classroom could have done what the laboratory has done and can do. But in arithmetic, the principles are derived directly from the observation of pupils. It is true that the observations need an observer with a psychological bent, who can get beneath the surface. But the little which Judd's chapter has to say about laboratory observations of rates of counting seems of little importance in view of his recognition that it is the number system as a whole which needs to be acquired, not merely the seventy-two separate possible additions, subtractions, or multiplications, because each helps all and all help each. Further, arithmetic is far from being the subject which least needs psychology. For in arithmetic it can at least be affirmed that all thought on method is truly psychological, that is to say, that the ordinary thoughtful teacher would be less likely to reach sound conclusions if he had not a psychological background than if he had. But, when we pass to some subjects, of which modern languages may be taken as an example, it is doubtful whether at present psychology has much to offer. For instance, one of a child's difficulties is in catching the sounds of a foreign language at all, and it does not need technical psychology to realize that the reason is simply their unfamiliarity : and a knowledge of what sounds are most difficult will not come from psychology ; it is more likely to come from phonetics. Once that is known, the main requisite is patient industry in testing each individual pupil. Again, in many direct method lessons which to the casual observer would seem excellent, careful attention reveals that, while the teacher is talking two-thirds of the time, the average number of words uttered by each pupil on his own initiative (that is, not merely repeating what has been said by the teacher or by other pupils) is not more than about half a dozen ; and it may reasonably be assumed that what is said in chorus is said, by those pupils who need practice most, in such a mechanical way that it does not give any practice worth speaking of. To remedy such a state of affairs the teacher would not turn to psychology : he must needs use his own inventiveness or the experience of other teachers who had devised tricks to make pupils take a more active part. Or take the sciences. To answer the question, what capacities and attitudes do we wish the study of science to develop ? we should start thinking about a wide range of scientific matters. Our answer might be that Kôhler had begun to give a laboratory training to his apes when he so arranged their environment that, in order to reach a bunch of bananas which was beyond their reach, they thought for themselves of the plan of using a bent bough or of placing one bench on another. Or it might be that the earliest step in science taken by a child is when, after asking the question ' why ? ' he first does something to find out the reason for himself. But, if any of us wished to settle in his own mind the relative importance in the mental make-up of the scientist of enlightened curiosity, of clear presentation of the issue, of inventiveness in the devising of apparatus, or what not, it would be to the history of science, not to psychology, that he would look for an answer. Once more, the resulting changes in the traditional modes of teaching science would depend on the teacher's inventiveness or on his knowledge of the successful procedure of others.

The introduction to educational psychology by way of method can then probably be only a beginning. But it is a useful beginning if it makes the student in training feel

that psychology is practical. When he has read a chapter on the teaching of a certain subject, he sees why one method is right and another wrong, and that, if he is to get a certain result, he must proceed in a particular way. Such a concession to human frailty is surely justifiable. The principles of approach to a new subject which, in the name of psychology, we urge students to pursue in training school pupils, do not surely lose all their validity when the pupil passes the magic age of eighteen at which he or she is admissible to a training college. A more philosophical study of psychology will in fact help him more; but he will not undertake it till he has been first led to look on psychology favourably. If we begin at this end, he may regard it as something to be crammed for an examination and then discarded.

The more general chapters at the end of Professor Judd's book would seem somewhat scrappy in an English text-book, but the usual American plan of giving ample bibliographies is followed. If the encouragement to supplementary reading which is given in American schools determines the attitude of American students as we should expect it to do, then the brief opening up of a subject is justifiable. Unfortunately, the ordinary British student expects a text-book to supply all he needs; the only references which he tolerates are to original authorities, and in most cases such references are regarded as grounds for acceptance rather than as suggestions for reading. It is, however, interesting to the English reader to discover the attitude of a representative American on some of these questions. Enthusiastic Freudians would probably be surprised to discover that the facts on which they lay so much stress are treated as a somewhat small part of a greater whole, viz., the dissociation of personality. But it is certainly suggestive to think of education at its best as an effort to promote an integration of personality (perhaps never completely attainable) and of environment at its worst as tending to its dissociation.

THE USE OF THE LATIN SQUARE IN DESIGNING EDUCATIONAL EXPERIMENTS.

By GODFREY H. THOMSON.

IN February, 1939, Mr. Stanley D. Nisbet published in this *Journal* a comparison of four different methods of testing spelling ability, and shortly thereafter Mr. M. S. Bartlett wrote to Mr. Nisbet pointing out that, with a slight though important change, the latter's method of experimenting was what is known in agricultural experiment as the Latin¹ Square, a device for permitting the most favourable application of Professor R. A. Fisher's analysis of variance in certain circumstances. Mr. Bartlett enclosed some of the necessary calculations to illustrate this, made by one of his students whose initials alone are known to me (C.A.B.S.).

Since then this illustration has served in our course of lectures to illustrate the subject of the Latin Square to students of experimental education, and I had hoped that further examples of its use in school experiments might be published in new experimental articles. But the war has intervened. I would, however, like the possibilities of the method to be recorded, and to become known to teachers, and so I am taking the course of sending this brief note to the editor. It ought to have been written by Mr. Bartlett or Mr. Nisbet, but the former is engaged on special war work and the latter is in the Royal Air Force.

In an agricultural experiment the Latin Square is an actual field, divided into as many blocks as there are 'treatments' to be compared. Each block is also sub-divided into plots, to which the 'treatments' are applied in such a way that every block has plots treated in each of the several ways (for the blocks might differ in fertility). The whole arrangement forms a checker-board of squares (or rectangles), with as many rows or strips as there are columns or blocks, and each equal to the number of treatments.

In Mr. Nisbet's experiment there were four 'treatments,' viz., four ways of testing spelling, called Multiple Choice, Second Dictation, Wrongly Spelled Word, and Skeleton Word. There had also been an original dictation test of all the words, previous to the application of these four methods. The four 'blocks' of the field were here represented by four groups of children. Four lists of words to be tested represented the four 'plots' within each 'block' of children. The 'treatments' were given as shown in the diagram on next page.

Nisbet's arrangement differs from a Latin Square in one important respect.

It will be seen that the four 'treatments' are arranged symmetrically about the diagonal on his diagram. *In a true Latin Square they should be arranged at random, subject, however, to the restriction that each treatment may occur only once in each row, and only once in each column.* For the purpose of our numerical illustration we may assume that a random choice with these restrictions had happened to give the symmetrical arrangement actually employed. In designing another experiment, however, actual randomization ought to be employed. The reasons for such randomization, and its advantages over a systematic arrangement, can be studied in Fisher⁽¹⁾, page 86, *et seq.*: "The failure of systematic arrangements comes from not recognizing that the function of the experiment is not only to make an unbiased comparison, but to supply at the same time a valid test

¹Because Latin letters are commonly used for the treatments. The Graeco-Latin Square is a more complex arrangement in which both Greek and Latin letters are used.

of its significance." It will be seen that the particular occasion when a Latin Square experimental design is advantageous is when two different disturbing effects are both to be eliminated—in our case inequalities in the groups of children, and inequalities in the lists of words.

GROUPS OF CHILDREN

	I.	II.	III.	IV.	Total.	Mean.	
Lists of Words.	A. . {	Multiple Choice, 81	Second Dictation, 41	Wrongly Spelled, 44	Skeleton Word, 53	219	54.75
	B. . {	Skeleton Word, 38	Multiple Choice, 97	Second Dictation, 42	Wrongly Spelled, 49	226	56.50
	C. . . {	Wrongly Spelled, 31	Skeleton Word, 43	Multiple Choice, 67	Second Dictation, 36	177	44.25
	D. . . {	Second Dictation, 57	Wrongly Spelled, 33	Skeleton Word, 43	Multiple Choice, 81	214	53.50
TOTALS ...	207	214	196	219	836		
MEANS ...	51.75	53.50	49.00	54.75		52.25	

In the agricultural experiment the 'yield' of each plot is later found. There may be more than one 'yield' under investigation—e.g., the experimenter may be interested in the weight of the crop, or in the strength of stalk, or in the number of diseased plants, or in all three. In the same way in Nisbet's experiment there were several points in which he was interested. I shall choose for my numerical illustration the *number of words wrong in the original dictation but correct in the later test*. These 'yields' are shown on the diagram above by the figures in each 'plot'.¹

Fisher's analysis of variance can now be applied to these figures. The quantity to be analysed is the sum of the squares of each of the sixteen 'plots' measured from their mean 52.25. This can be calculated by actually forming and squaring the discrepancies from 52.25, or more easily by squaring and adding the actual numbers 81, 41, 44, etc., and subtracting 836×52.25 , giving 5,667. This is the only long calculation, the other parts being shorter. This 5,667 is now analysed as shown in this table.

Between	Sum of Squares	Degrees of Freedom.	Mean Square.
Tests	4626.5	4-1	1154.25
Lists	359.5	4-1	119.88
Groups	74.5	4-1	24.88
Error	606.5	6	101.08
TOTAL	5667.0	16-1	—

The sum of the squares 359.5 due to differences *between lists* is what the sum of squares would have been had there been no other source of difference between the plots. In each

¹The calculations made by C.A.B.S. concerned two other 'yields' of the experiment, not that here used.

row in our 'Latin Square' there is represented each kind of test and each group of children. The number 359·5 is most easily calculated¹ as:

$$\begin{aligned} & 219 \times 54\cdot75 \\ & + 226 \times 56\cdot50 \\ & + 177 \times 44\cdot25 \\ & + 214 \times 58\cdot50 \\ & - 836 \times 52\cdot25 = 359\cdot5, \end{aligned}$$

but the interested reader should calculate it also from first principles. The part 74·5 of the total sum of the squares, due to differences *between the groups* of children, is similarly obtained from the totals and means of the columns of the Latin Square. The part 4626·5 due to differences *between the tests* is similarly got by finding the totals and means of the plots belonging to each 'treatment,' i.e.,

		Total.	Mean.
Multiple Choice	81+97+87+81	$326 \times 81\cdot5$	
Skeleton Word	38+43+49+53	$+177 \times 44\cdot25$	
Wrongly Spelled	31+33+44+49	$+157 \times 39\cdot25$	
Second Dictation ...	57+41+42+36	$+176 \times 44$ $- 836 \times 52\cdot25 = 4626\cdot5$	

The 'error' sum of squares, 606·5, may be looked upon as the balance needed to make up 5,667, though it can be independently calculated as a check.

From each part of the sum of squares is found the mean square for that part by dividing by the number of 'degrees of freedom' (one less than the number of items concerned), and then the significance of each mean square is evaluated by considering how it compares with the mean square due to error. In the present table neither the difference between lists nor the difference between groups show a significantly larger mean square than that due to random error—indeed, the groups are unnecessarily like one another. The mean square due to the tests, however, is more than fifteen times that due to random error and is certainly significant, as can be found by consulting certain tables named below. For the sake of brevity I shall not go into the further calculations to distinguish between the four tests—it is, in fact, 'multiple choice' which stands out from the others as being easier or more suggestive of the correct spelling.

In the appended bibliography the Latin Square is described in (1) and (2), though not applied to educational problems. Jackson's pamphlet (3) applies the analysis of variance to such problems, but not the Latin Square itself. Table V in Fisher and Yates (4) is the table by which to decide whether the mean square is significantly larger than the error term. It is printed also in Jackson's *Bulletin*, and elsewhere. The paper by Irwin (5) is an excellent explanation of the mathematical foundations of the analysis of variance, and that by Fisher (6) is a classic.

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¹ Alternative plans will occur to the reader—e.g., using 219², 226², etc., from tables.

JUVENILE DELINQUENCY: A COMPARATIVE STUDY OF THE POSITION IN LIVERPOOL AND ENGLAND AND WALES.

By J. H. BAGOT, M.A. (Jonathan Cape, 1941, pp. 93. 5s net.)

MR. BAGOT's inquiry is the first of a new series of social studies to be issued by the Division of Statistics in the Social Science Department of the University of Liverpool. Slender though it is, his volume will at once take a place among the more important contributions to his subject recently published in this country.

He has chosen for investigation "every case in which a juvenile was found guilty of an indictable offence in Liverpool during the two years 1934 and 1936"—in all about 3,000 cases, 2,986 boys and 235 girls. The Act of 1933 requires a report of home and family circumstances to be presented to the court in each case. These records have formed the basis of Mr. Bagot's research. In analysing the data, he adopts much the same headings as were proposed in the survey of juvenile delinquency in London fifteen years ago, and compares the results discovered in the two cities. Quite naturally he himself tends to emphasize the differences. Yet, in the main, this newer investigation provides a striking confirmation of the various conclusions reached in the London report, and suggests that most of them hold good, not only for the place and time at which they were collected, but also for other large cities down to the outbreak of the present war.

His own view is summed up by saying that "environmental factors must be held to be the principal causes of such delinquencies as appear in court." Among these he considers economic factors to be far more important than psychological. During the period he has chosen—a period of marked economic depression in Liverpool—more than 50 per cent of the families from which the delinquents came were living below the 'poverty line'.¹ He plots two maps of delinquency similar to those published for London; and the wide variations in crime are found to correspond closely with the economic conditions obtaining in the different wards. The figures range from less than 2 per thousand in the outlying and better-class residential districts to more than 10 per thousand in the poverty-stricken slums concentrated near the docks. And he concludes: "From whichever point a start is made, we are ultimately brought up against poverty as the factor common to all."

Of the various conditions associated with poverty, he regards overcrowding as the most important—far more so than impairment of physical health or nutrition. Overcrowding, he writes, "must be strongly associated with delinquency, and may be one of the principal causative factors." But, here as elsewhere, the reader is tempted to regret that Mr. Bagot never seeks to measure the strength of the association before he compares it. In the London inquiry, the device of correlation (in spite of obvious shortcomings) was adopted for this purpose. In general, Yule's 'coefficient of colligation' ω seemed the best to use.² On applying the formula to Mr. Bagot's own figures, we find that the association between

¹In London only 16 per cent were found living below the 'poverty line,' but there the survey was made before the economic depression, from which Liverpool was only slowly recovering in 1934-36.

²*Mental and Scholastic Tests*, p. 219, where an 'Abac' is given for reading off ω from the two percentages.

delinquency and overcrowding is only .23, while that between delinquency and 'mental ability' (or the lack of it) is quite as high, even with Mr. Bagot's rough assessments.¹

Throughout his inquiry Mr. Bagot's only criterion is to compare the percentages just as they stand. Since the practice is exceedingly common in educational researches, it is worth while noting its limitations as a means of inferring what he terms 'strength of association.' The following figures are taken from his table:

TABLE I.—PERCENTAGE OF BOYS PLACED IN EACH CATEGORY.

Group.	Mental Ability.		Total.
	Average, or Above.	Below Average.	
Delinquents (1934)	51	49	100·0
Non-delinquents	75	25	100·0
TOTAL	126	74	200·0

In examining such tables it is not, I think, generally realized that the *percentage-difference expresses, not the correlation, but the regression*. Thus the difference commented on by Mr. Bagot (.49 - .25 = .24) states only one of two possible regressions. Assuming (as his table does) that the totals for delinquents and non-delinquents are equal, the other would be $49/74 - 51/126 = .257$, much the same figure as before. However, in the table above, the second set of totals (126 and 74) are not very unequal. When they are, a correction is necessary. To obtain the product-moment correlation the *percentage difference should be divided by the (geometric) mean of these two totals*. Thus, the point-distribution correlation is here $.24/\sqrt{1.26 \times .74} = .248$, the same figure as we should obtain from the mean of two regression coefficients. Yule's coefficient of colligation (based on equalizing the bottom totals as well as the side totals) would be slightly larger, namely, .258.

Two objections may be urged against this simple procedure. first, although the control-group of non-delinquents may be equal in number to the group of delinquents, in the total population the proportions would be nearer 2 · 100 than 100 · 100; secondly, the distribution of 'mental ability,' and possibly of delinquent tendencies, ought to be treated as a function of some normal variable, rather than as concentrated at two contrasted points. To discuss these problems here would be out of place. I will merely add that

¹ The assessments were obtained from the head masters of the different schools: but, since both the judgment and the standards of the various head masters must differ, such a basis will greatly underestimate the amount of association. In Mr. Bagot's series, the proportion of mental defectives was "very low—between 2 and 3 per cent," and he protests that the figures obtained in London, between 7 and 8 per cent, magnify their importance. "Dr. Burt's statement," he adds, "is apt to mislead those who are not familiar with the subject." In Liverpool "the influence which has been discerned is backwardness, not defectiveness." But Mr. Bagot exaggerates the difference between us. As regards figures, his percentages relate only to defectives already ascertained and certified; but it is those who have *not* been certified that are most likely to get into trouble. Moreover, deficiency is a matter of degree; hence much of the slight divergence would be at once explained, if we could assume (as we probably may) first, that in Liverpool the delinquents were not systematically subjected to psychological tests, and, secondly, that if tests could be applied, the borderline in Liverpool would be found to be somewhat lower than in London. As regards conclusions, Mr. Bagot's are really the same as my own. "Most young criminals," I wrote, "are not so much defective as dull; the commonest characteristic that distinguishes the delinquent is not a certifiable deficiency, but a mental retardation, sufficient to handicap him in nearly every way, but not enough to enable him to be dealt with under the Mental Deficiency Act" (*The Subnormal Mind*, p. 177).

in the present instance, as in so many others, the two adjustments thus required would roughly cancel out. The 'normal' or 'tetrachoric' correlation, calculated with actual proportions, proves to be .263.

The other factor on which Mr. Bagot lays chief stress is unemployment. Here his comparison is based on figures for unemployment among delinquents *aged fourteen to sixteen* (69 per cent in 1934, 58 per cent in 1936) as contrasted with those for insured persons *aged sixteen to seventeen* (9·8 per cent and 12·4 per cent). "We have here," he says, "the most outstanding difference between delinquent and non-delinquent discovered in this inquiry." But, of course, it is quite conceivable that an older group, whether delinquent or not, might be more fully employed than younger children who have only just left school. And if unemployment has the supreme importance he assigns to it how is it that in 1936 the percentage of unemployment among delinquents has fallen, although among non-delinquents it has risen by nearly 50 per cent?

Since more than one factor must plainly be at work, I suggest that the problem is one in which factor-analysis might render assistance. Taking the returns for the last available decade (1929-1938, inclusive), stating the percentages of offenders found guilty in each year, let us work out the intercorrelations between the various age-groups. The coefficients reveal at least two 'group factors' more or less antagonistic. The factor affecting the adult age-groups is closely related to unemployment; that for the younger age-groups shows an opposite trend. Thus, for the ten years in question, the correlations of unemployment with crime are as follows: age 10-14, -·59; age 14-16, -·45; age 16-21, -·12; age 21-30, +·17; age 30 and over, +·57. The evidence suggests that, with the onset of the economic depression, figures for juvenile delinquents of 14-21 began slightly to rise. But almost immediately a new factor came into play; public and official interest in juvenile delinquency increased, and culminated in the Act of 1933. As authorities began to use the powers conferred on them, the official figures continued to soar, reaching a peak in 1937; during 1933-37, however, the amount of unemployment gradually diminished. A comparison of figures by place instead of by time would tell the same tale; delinquency among children of school age is affected by unemployment only in a slight and indirect fashion; with older juveniles it may be serious, but can nevertheless be counteracted by appropriate measures; with persons over thirty such measures are for the most part either non-existent or non-effective. Hence crime among the older members of the population shows a marked and positive correlation with unemployment.

About the importance attaching to the intellectual and temperamental characteristics of the delinquents, Mr. Bagot is more doubtful. A psychologist, however, who finds it difficult to accept poverty as always the 'ultimate' cause, will be inclined to ask whether the physical, mental, and temperamental equipment of the unemployed delinquent may not often account both for the unemployment and for the delinquency. But Mr. Bagot replies that "such psychological conditions are found in children of every class, and yet fail to bring children from the better classes before the court."

His arguments may be questioned on more than one ground. No doubt dullness, backwardness, instability and even mental deficiency are found in every class; but they are found twenty to forty times as often in families who drift into the slums as in families from the middle or professional classes. Secondly, is it fair in a psychological argument to limit delinquency solely to cases brought before the court, and the evidence

solely to the information available to the court? Mr Bagot is ready to admit that other inquiries have laid more stress upon psychological factors; but this, he believes, is because those inquiries have unwittingly selected cases of a special psychological type. The cases studied in the London survey, he maintains, were not "typical of juvenile delinquents," but were "representative of the more serious type of case encountered by the psychologist." His criticism rests on the false but widespread assumption that psychologists are concerned solely with 'more serious' cases—with that rarer group of delinquents that are suffering specifically from some definite mental or nervous abnormality, and that the ordinary type of delinquent who comes before the courts needs no special psychological inquiry to discover how or why he came to commit his offences, but simply a timely reprimand or punishment to make him stop his crimes forthwith. Actually, in the London inquiry, to check the possibility that an undue proportion of abnormal cases might be coming forward, an intensive survey of the whole school population of a representative borough was carried out, and, as explained in the report, every delinquent so encountered was included. These cases, so far from being 'more serious' than those sent to the courts, were, if anything, less serious, since many were of the incipient type known only to teachers, and not to the police¹

As regards other causal agencies—the influence of broken homes, of gangs, of monthly and seasonal variations, and, above all, the paramount importance of home discipline—Mr. Bagot's data and conclusions provide an interesting parallel that is in almost complete agreement with the results obtained in London. An appendix contains a brief note on the increase of delinquency in war-time. He considers three main factors to be at work. the factor chiefly noted during the last war—relaxation of home discipline where the father or older brother had joined the army—is, he believes, less influential during the present war; absence from school he considers to have been at least as important; but most important of all apparently is the emotional and nervous atmosphere produced by the very fact that a war is in progress and actually being waged over our towns.

Mr. Bagot concludes with an appeal for further research. He holds, however, that "the case-study method adopted by Dr. Burt," though often necessary for treatment, is not only inadequate but frequently misleading if used as a basis for conclusions about causes. The psychologist no doubt will be tempted to protest in similar terms against an exclusive reliance on official statistics. It is too often forgotten that such figures primarily reflect, not so much the activities of the criminals as the activities of the police; that, indeed, is largely their purpose. At Liverpool a former chief constable has himself drawn attention to the danger of taking them at their face value "It is impossible," he writes, "to compare Liverpool with other towns by quoting statistics. To emphasize that Liverpool has 443 brothels, while Manchester has only five, would be fantastic. Such figures

¹I might, indeed, retort that it is rather Mr. Bagot's groups that are not representative. For example, finding that only 7 per cent of his cases are girls he implies that juvenile delinquency "is mainly a problem concerning boys." The sex-difference in delinquency is undoubtedly wide, but not so wide as that. Teachers often express surprise at the low figure for girls as given in published statistics. There are three main reasons. (1) Officials and others are far more reluctant to bring girls before the courts. (2) The petty thefts of girls of school age are committed far more frequently within the home, and so become known only to parents and teachers and not to the police. (3) Among girls the 'more serious type of case' consists largely of sex-offences; and, in virtue of the provisions of the Act of 1933 (Section 62), these are not dealt with at the court at all. They are thus excluded from Mr. Bagot's data. Hence, for these and other reasons, the psychologist and teacher (though not the official interested solely in court problems) will be tempted to hold that Mr. Bagot's conclusions are 'based on a selected type of case' and 'will have to be modified' in the light of further inquiry.

profess to show only what is 'known to the police'; hence all that they can prove is the superior 'knowledge' possessed by the Liverpool police!"

However, rather than dismiss either one method or the other as wholly untrustworthy, I would suggest that both methods—the extensive and the intensive, the statistical and the psychological—deserve to be adopted side by side. In regard to the causes of juvenile crime, as we have seen, they appear in the main to be mutually supporting. Yet, even where we cannot accept the inferences that Mr. Bagot has drawn from official statistics, we can frankly acknowledge that his inquiries at least suggested presumptive hypotheses on which the future psychologist may profitably concentrate attention, and yield a most instructive survey of delinquency as seen from the standpoint of the juvenile court.

CYRIL BURT.

POLITICAL PROPAGANDA.

By F. C. BARTLETT. (Cambridge University Press, pp. x+158 3s. 6d.)

THE jacket of this book asserts that Professor Bartlett has here put the whole study of the popular mind on a scientific basis. This is a large claim for so small a book. However, the size of the book cannot fairly be taken as an indication of the importance of the subject, nor of the expert and detailed knowledge and skill which can deal with such a large matter so satisfactorily in so little space. Even humour has found space to creep in, as when an excellent story is quoted in illustration of the fact that lying propaganda tends to produce a wider and wider disbelief in propaganda and to suggest the state of mind to which the political propaganda of dictator States and single party may be leading people everywhere. The story runs as follows : Two clever business rivals met on a Continental railway train. After some chatter in which each attempted to learn the destination of the other, one volunteered the information that he was going to Vienna. The other eyed him suspiciously. " Now, why do you not tell me the truth ? " he asked. " You know you tell me you are going to Vienna, so that I will think you are going to Cracow, when you know very well that you are really going to Vienna. Why do you lie to me ? "

The material is so condensed that few readers will grasp it all at one reading, but everybody who reads it even once is likely to find it interesting and profitable.

So many important social and psychological questions are raised that it is impossible to mention them all and difficult to choose between them. Let us first get some idea of the general plan and contents of the book. It is one of the 'Current Problems' series which has as General Editor Dr. Ernest Barker. There are six chapters devoted respectively to aims of political propaganda, growth in the modern world, methods (two chapters), effects, and propaganda for democracy. In general dictator propaganda is considered as it is (or seems) and democratic propaganda as it might be. The unavoidable overlap of propaganda and education in every public system of education is noted—unavoidable because due to the immaturity of the intelligence in the very young (or the otherwise immature). Political propaganda aims at influencing opinion and conduct, especially social opinion and conduct, in such a manner that the persons who adopt the opinions and behaviour indicated do so without themselves making any definite search for reasons—i.e., by suggestion rather than by reason or critical thought. Education, it is pointed out, has a similar aim—that of influencing and controlling thought and conduct, but in such a manner that the persons are stimulated to think for themselves. One of the main points in which dictator propaganda differs from democratic propaganda is in its reliance on the manipulation of 'the unintelligent masses.' The other relies on the manipulation of intelligence and forbearance in the general population.

The chapter on the 'Growth of Political Propaganda in the Modern World' is a very interesting and concise summary of what seem to be the leading characteristics which differentiate the political propaganda of the three main dictator states of Europe, namely, Russia, Italy and Germany. There appears to be hardly anything genuinely original in recent German propaganda except in certain new applications (some clever, some stupid) of old general principles. It is, however, all conducted with great system, exaggeration and thoroughness, and, above all, with an air of colossal and immovable

belief in its effectiveness. The relationship of propaganda to education crops up again in this chapter, especially in the account of Russian internal propaganda. Some education is vital for successful propaganda, yet an education which leads to ability and scope to think freely and critically is fatal to certain kinds of propaganda. So then censorship and control of education become increasingly necessary.

Two chapters are given to the methods of political propaganda. In the first of these some general principles are presented. Prestige, and the extraneous aids with which it is bolstered up, are discussed. Some of these are physical force and fear, all kinds of respected institutions, the printed word, pictorial art, radio, as well as uniforms, badges, titles, emblems, flags and all special symbols. Interesting examples are taken from Nazi propaganda before and after the seizure of Austria, Sudetenland, Czechoslovakia, and Poland. The psychologically important principle is illustrated that feelings and attitudes made lively by the elements of one situation very rapidly spread to the whole of that situation and to others with which it can be connected. It is shown, too, how symbols (e.g., words, pictures, gestures, hints) are used in at least two meanings—one obvious and the other below the surface—how emotions, sentiments, attitudes, hate, love, fear, and the like are stirred up and manipulated towards the desired end. Incidentally some of the qualities of a successful propagandist are indicated.

"Propaganda is a sackful of tricks," and in the chapter on 'Special Devices and Tricks' the whole bag is opened up and we are shown how the tricks work. There are symbols, catchwords, exaggeration, simplification, dramatization, emotionally-coloured words, selective presentation of facts, impressive but misleading statistics, appeals to emotions and sentiments, attacks on morale, rumour, humour, barrage and others. The methods of political propaganda of dictator States and single party have been designed to delude intelligence. Propagandists of dictator States have, or pretend to have, a low estimate of the intelligence of men in the mass; they believe or pretend to believe that people in the mass exhibit a childish, prim, inferior, mean and altogether despicable intelligence. The masses think primitively. In this country we have shown no inclination to believe in Hitler's doctrines about mass-psychology and about race psychology, but it is well to know that some of them can be refuted with the voice of authority. Professor Bartlett does not agree with Hitler's estimate of the 'masses.' His investigations into primitive culture, the reactions of different social groups, the processes of remembering and forgetting, and other relevant topics allow him to speak with a voice which should be heard in these matters.

It is in this fourth chapter that we find some interesting references to the League of Nations: its rise and fall, with reasons relevant to the subject of propaganda, and the prospect of a future League of Nations (if one should arise under that name or another) having the same fate unless it makes certain changes in its propaganda policy.

Chapter V deals with the effects of political propaganda and gives the reminder that no genuinely-controlled evidence as to the effects of political propaganda is at present available, and such evidence is extremely difficult to secure because in any one situation it is only one of numerous agencies at work towards the same ends. Accurate measurement has not yet been achieved, but attempts are being made. On this point references are given to several investigations and reports (see p. 127).

By means of a simple little experiment the reader is enabled (if, for example, he belongs to a study group or has small groups of people accessible) to conduct an investigation by which he can see for himself the effects of some of the devices already mentioned, like

lies, inconsistencies, mannerisms, cues ; and the ingenious reader can plan additional experiments for himself.

A distinction should be noted between *short-term* effects (largely emotional) and *long-term* effects (more intellectual). The characteristics of each and the methods used for each are discussed. It should be a challenge to the intelligence of any democratic people to know that Hitler has said that if a propaganda appeal is to be effective the very lowest intelligence of the audience must be kept in mind and everything brought down to that level. If he works on this principle it should not be difficult for the people of this country to resist his propaganda if they give a little thought to the method.

In brief, the theme of the final chapter is as follows : Democracy cannot afford to neglect propaganda ; people believe in it, and by it results can be gained. Propaganda in and for democracy has now a magnificent opportunity if it can only rise to it. It must not simply imitate dictator States, but it can learn from them, adopting some ideas, rejecting others. It must not over-work emotion, nor under-work reason. Reason should lead and guide sentiments and emotions. (One might add that from the latter may come some of the driving force behind reason in action. This will be mentioned again a little later.) It must adopt a long-term policy except in emergencies when it may have to try to get short-term results. It must plan ahead, recognizing that human affairs must change and the human beings who change them must change with them. It must recognize the fact that individual and sectional differences can exist alongside unity—a freely achieved, consistent and expanding unity. The possibility of intelligent control of human action must shape the methods and inspire the aims of democratic propaganda. The chapter does not neglect to come down to details, but the book must be read for these. The kind of propaganda (news, entertainment, sport, etc.) which should be sent out in different directions—home, fighting services, enemies, neutrals, members of the Commonwealth—is clearly indicated. The difficulties of a Ministry of Information are sympathetically considered and examples given. It cannot succeed and should be expected to have failures unless it is in intimate co-operative contact with other Government Departments (e.g., Supply, Home Security, Labour, Finance), and genuine co-ordination between Government Departments is one of the most difficult things for a democracy to achieve.

Attention should perhaps be called to one suggestion which might escape notice. As regards propaganda for the fighting forces it should not be forgotten that in these there are many young people who have had their careers broken or temporarily diverted or suspended. In times of relative inactivity they may be tempted to worry about their future, so effective 'entertainment' for them would need to have amusement in its lighter forms supplemented by some form of instruction and definitely planned education.

In conclusion, Bartlett expresses a belief that the success of all democratic political organizations (including propaganda) depends largely on a knowledge of the human factors which determine friendliness between differently organized social groups, and that so far we have had mainly speculation and arm-chair analysis as guides. But a beginning has been made to lay a sounder foundation. This beginning must be developed.

Such is, in brief, the main content of the book. Let us study some of its fundamental ideas a little further.

In his foreword Bartlett has made the following comments :

" Science has gained control of material culture but social and mental culture lag behind."

"Mankind has resources and does not know how to use them. . . ."

"Muddle and disorder inevitably follow and will continue, until science is given as great an opportunity to investigate and understand the human mind as it has been and is being given to discover and direct the processes of the external world."

How long must voices such as this go on crying in the wilderness? A similar appeal can often be heard in the speeches of men in charge of the world's affairs. To take only two examples: It rang clear and definite in the presidential address of the late Lord Stamp when he was President of the British Association for the Advancement of Science a few years ago. More recently it was to be heard in Lord Halifax's historic speech as Chancellor of the University of Oxford and Foreign Secretary, when he deplored "the inhuman conception of the so-called economic man" and "the tendency to explain all history and humanity in economic instead of in human terms."

There is no doubt about the truth in these ideas. The difficulty is to get them put into action, to get facilities for the acquirement of more knowledge than we have and to get into everyday affairs that knowledge which we have. The material of the social sciences must be studied more thoroughly, consciously, scientifically, till a sound understanding is gained of such effects as those of individual on individual, individual on crowd, crowd on individual, group on group, nation on nation, and though the results will prove useful at different stages they must be used only tentatively until they are well established. This is an ambitious programme but absolutely vital for the progress of democracy and particularly for the principles it professes but does not always practice.

In another part of the book the same point arises in reference to propaganda itself. The qualities, outlook, and knowledge of those who direct propaganda must be those of the social psychologist and sociologist, whether they call themselves by these names or not. In war-time any propagandist who is ignorant of certain facts, or does not act on them, is conducting propaganda for the enemy, not against him. This need for understanding and for action based on understanding is inherent in any situation when human relationships are involved. The result of neglect of this is apparent in the gigantic and horrible struggle now going on between nation and nation. Continued neglect in post-war days can only dull and gradually kill any hope that this is indeed at last the war which shall end wars, and bring the day when we shall not have to rely on primitive and bloody methods of settling disputes and when there shall be brought about a world situation in which, to use the words of Mr. Winant, the American Ambassador, "Earth's future children shall no longer live in fear."

There are other points in the book which are of more exclusively academic interest. For example, Bartlett writes (p. 84): "It has been urged often that 'emotions paralyse thinking.' This is true only if by 'thinking' is meant the critical analysis of data presented. It is not at all true if 'thinking' means the uncritical acceptance of sweeping generalizations which can easily be put into words and formulas. That kind of thinking is not hindered but helped by emotions and sentiment. . . ."

Would it not be more true to fact to say '*violent* emotions often paralyse thinking,' for emotions and sentiments do not seem always to paralyse the ability to analyse critically data presented? In fact, they seem sometimes to help it.

It is hoped that this review has indicated that the book is likely to prove stimulating even to those who already know a good deal about the ways, and bye-ways, of political propaganda. It ought to be particularly useful and informative to those who without

specialized knowledge of psychology are endeavouring to fit themselves to form intelligent judgments on home and foreign propaganda. It can be used as an aid to peeps behind the scenes of both kinds. To someone who is once alive to the aims, methods, devices and effects it is easy and educative, sometimes irritating, sometimes entertaining, to watch in current events their working and development.

Any intelligent reader should be able to see, day after day, week after week, as the war goes on many of the things happening which are here described. And if he opens his eyes now, when propaganda is so much, as Professor Bartlett puts it, 'in the air and on it,' when the war is over this knowledge should be of great value to himself and to the community. For, as can be grasped from the contents of the book, propaganda need not be only destructive as so much of it is at present, but when used in and for a democracy with emphasis on intelligence but no undue neglect of feelings, emotions and sentiments, it can be made constructive and educative.

FRANCES M. AUSTIN.

OUTLINES OF RESEARCHES REPORTED IN THESES PRESENTED FOR HIGHER DEGREES OR DIPLOMAS.

THESE OUTLINES MUST BE SUBMITTED THROUGH THE HEAD OF
THE DEPARTMENT IN WHICH THE RESEARCH WAS CARRIED OUT.

Summaries of Theses submitted in 1940 in part fulfilment of the requirements for the degree of Bachelor of Education, University of Edinburgh. The Theses are lodged in the Library at Moray House, The University, Edinburgh.

An Investigation into Parental Attitudes to Elementary Education.

By DOROTHY BREWER.

The purpose of the investigation was to make a broad survey of the attitudes of a sample of parents of English elementary school children towards education. The points to be discovered were : (1) To what extent parents had co-operated with schools and to what extent they were willing to do so. (2) Whether parents have any definite criticisms to make against the schools. (3) Attitudes towards subjects in the curriculum. (4) Attitudes towards out-of-school activities. (5) Attitudes towards social education. (6) Attitudes towards discipline.

The investigation was conducted by means of a questionnaire which was answered by 180 parents of second-year children in six senior schools under the City of Lancaster Education Committee.

The results show the following general trends :

- (1) These parents are ready to co-operate with the schools, but think they have not, in the past, been given sufficient opportunity to do so. Only a small number of parents have paid unsolicited visits to the schools attended by their children.
- (2) They make no general criticisms against the schools. Nineteen per cent mention things they like in the school, such as thoroughness, interest in their children, and modern equipment. Only 13 per cent express grievances, mentioning for example strict discipline, shower baths in winter, lack of personal tuition.
- (3) Parents were asked to choose the three subjects judged most valuable, and arithmetic, domestic science, and English led, each receiving over 60 per cent of the votes. Physical training followed at some distance (39 per cent). Subjects judged least valuable were music, art, and history.
- (4) Parents are unwilling to allow children to stay in school after school hours, particularly if extra time is to be spent on 'school work.' Recreational activities (games, concerts, school societies) are not frowned on to the same extent but even here about 50 per cent of the parents feel that these, too, ought to be fitted in before 4.0 p.m. Possibly the war and the black-out influenced these answers, through the questions were intended to refer to ordinary conditions.
- (5) Parents are anxious to have their children trained in good manners, good speech and cleanliness. Ninety per cent agree that it is the school's job to teach a child to speak well and correctly. In the matter of cleanliness 71 per cent think that difficulties should be referred to the home; only 24 per cent think that the school itself should take action, while a few are not in favour of any action at all. Advice regarding clothing is not well received, however, 69 per cent holding that this is a matter for parents. Almost equal numbers—46 per cent and 41 per cent—are for and against school uniform; 18 per cent mention financial difficulties.

On the whole, parents seem satisfied with the present disciplinary methods, but 17 per cent consider modern discipline too severe, while 22 per cent think it too lax. Over one-third advocate corporal punishment, but 90 per cent believe that the personal influence of the teacher is the most efficacious control.

Finally, 90 per cent believe that in the case of serious disciplinary trouble they themselves should be consulted.

Some Factors in Intelligent Social Behaviour.

By MARGARET MACDONALD FYFE.

An attempt is made in this study to estimate the relative importance of certain factors, individual and general, contributing to intelligent social behaviour. Generally speaking, a successfully adjusted individual combines understanding of others with an emancipated attitude to social problems and a reasonable acceptance of conflicting points of view. 'Intelligent social behaviour' was therefore analysed theoretically into: (a) social intelligence in daily life; (b) progressive thought; and (c) fair-mindedness or absence of prejudice. These were measured by the Hunt Test of Social Intelligence (S), (*Journ. App. Psy.*, 1928), the Adelaide Case Test of Liberal Thought (L), (Bureau of Publications Teachers' College, Columbia Univ., 1924), and the Watson Survey of Public Opinion (P), (*Ibid.*, 1925). To these were added the Otis Intelligence Scale, Higher Examination (O), (Harrap), and the Bernreuter Inventory (B), (Stanford Univ. Press), scored to measure self-confidence. The five tests were given to a group of thirty-three boys and thirty-eight girls of secondary school leaving age, half of whom had specialized in literature and language and the other half in scientific subjects. The measures of social intelligence could thus be considered from three points of view: (1) individual differences, (2) sex differences; (3) differences of intellectual type. The analysis consists of three sections. In the first the intelligence test and the personality test were correlated with each of the tests of social intelligence, and the relative influence of intelligence and self-confidence on successful behaviour was estimated. The following table of correlations was obtained,

	<i>Social Intelligence</i>	<i>Liberal Thought.</i>	<i>Public Opinion.</i>
Otis Intelligence Test .....	.35	.50	.10
Bernreuter Test of Self-Confidence ..	-.34	-.20	-.068

In the second the scores of boys and girls were investigated, and significant sex differences of behaviour sought for.

MEAN SCORES FOR BOYS AND GIRLS.

	<i>B.</i>		<i>S</i>		<i>L</i>		<i>P.</i>	
	<i>M.</i>	<i>A.v. dev.</i>						
Boys	52	19.7	54	4	44	4	82	6
Girls	43	17.8	60	5	42	5	66	8.7

Sex differences in the correlations between the Otis Test and others are also interesting:

<i>r of Otis with</i>	<i>S</i>	<i>L</i>	<i>P.</i>
Boys .....	.15	.55	.075
Girls	4	.45	.15

The conclusion is drawn that "the girls' intelligence is of a type which expresses itself better in managing personal relationships, and that abstract thinking is the preferred bent of the boys."

Finally, the scores of the science group and the language group were supplemented by separate correlations so as to elucidate the differences of behaviour produced by the scientific

and the humanistic point of view. The following table compares the average scores of students specializing in science with those specializing in languages:

	S.	L.	P.
Language	59	42	62
Science	55.8	44	66

Further study of girls' and boys' averages shows that the girls' average in social intelligence remains higher than that of the boys even when girls specializing in science are compared with boys specializing in languages.

The Scientific Investigation of Spelling Instruction: Two Preliminary Problems.

By STANLEY D. NISBET.

I.—*Is specific spelling instruction required for post-primary children?*

(1) An analysis of 2,288 mistakes made in the compositions of forty-two children of eleven to fourteen throughout a school session gave the following results. The number in parentheses is the frequency of each kind of error irrespective of its comparative importance. Punctuation (1,232), spelling (615), use of capitals (178), grammar (74), style and usage (74), meanings of words (57), abbreviated forms (34), handwriting faults (24). Spelling, therefore, on this analysis comprises 27.1 of the errors, and it appears that specific spelling instruction is necessary for children of this age.

(2) An experiment was made with 112 children aged eleven to fourteen to find whether spelling is learned incidentally from intensive reading. The children were divided into two parallel groups on the results of performances in a list of fifty words—twenty-five from Passage A and twenty-five from Passage B. A few days later Group I was given Passage A, and Group II Passage B to study silently. Both groups were then given the same list of words as before to spell. This gave a system of rotation groups.

Results: On Passage A Group I made an average gain of $2.61 \pm .366$, Group II an average gain of $1.14 \pm .253$. Therefore the gain due to reading is $1.47 \pm .445$.

On Passage B Group I made an average gain of $0.79 \pm .318$, Group II an average gain of $1.06 \pm .223$. Therefore the gain due to reading is $0.28 \pm .382$. Pooling the results gave a net mean gain of 1.19 words. The gains are statistically significant. Intensive reading and study of a passage then does lead to some learning of spelling, but this gain is not sufficient (roughly one word in twenty-five) to justify the neglect of specific spelling instruction.

(3) An investigation into dictionary work (based on a subordinate technique of the previous experiment) showed that the average effect of looking up a word, even if only to find its meaning, is so great that if a pupil could not spell a word before, the chances are one in two that he will be able to spell it afterwards.

II.—*How are we to construct a basis of spelling vocabulary?*

A spelling vocabulary of 708 words (with all the necessary data of frequency of occurrence, times correct, times wrong, mis-spellings) was drawn up from the sixty-nine compositions of sixty-nine children in a single age group (8-8½ years) of Scottish children, forming part of a collection of over 1,000 essays and letters (on any subject the child liked) extending over a wider age range. Every word without exception was tabulated. For example, the word *house* occurred ten times: and was spelt correctly six times, wrongly four times, namely as *houes* (2), *hous* (1), and *hourse* (1). Statistical measures of reliability (.96) and sufficiency (a measure of the number of new words which would probably be added by an additional number of compositions analysed) were applied to the list. The present list, based on only sixty-nine compositions, is, of course, quite inadequate. But it is intended to accumulate more and more material, and the list could then be of use to the compiler of a school spelling vocabulary in choosing and in grading words, and to workers desirous of analysing the types of spelling error made at different ages. Apart from spelling altogether it would form a word count of the writing vocabulary of children at different ages.

BOOK REVIEWS.

Psychotherapy—Scientific and Religious: By MARCUS GREGORY, with an Introduction by William Brown, and a Foreword by L. W. Grensted. (London: Macmillan, pp. xvii+495. 21s. net.)

This book is based upon a thesis accepted for the D Phil. at Oxford University, the work having been done under the supervision of the Wilde Reader in Mental Philosophy and the Professor of Philosophy of the Christian Religion, both of whom write short forewords.

The central topic of the book is the relation of various types of analytical treatment of mental and even physical disturbances, with faith healing and with the miracles of healing recorded in the New Testament. The author has chosen topics of great complexity and it is a pleasure to acknowledge a sounder psychological treatment than is usual in books of this type whether by theologians or by medical men. The book reveals a wide range of study, and as regards psychotherapy a broad and comprehensive treatment not particularly limited to one school. Perhaps the book is over-full of rather long quotations, though this may make the book all the more useful as an introduction to wider reading. The present reviewer is only an amateur in theological matters, but the general soundness of this aspect is testified by Dr. Grensted. My own impression of the author's treatment of the miracles of Jesus in the chapter entitled 'Christo-therapy,' is that it is ingenious from a psychological point of view, and yet of such a nature as not to offend most branches of the Christian Church.

The book reveals certain weaknesses which are apt to accompany extreme enthusiasm; and at times an absence of self-criticism results in some high-sounding passages or rather extreme statements which one imagines the author would himself question when in a somewhat different mood. On the theological side one might cite the statement that Christianity was primarily a system of psychotherapy (p. 405). Sometimes the writer's use of the Gospels suggests that he is quoting from memory.

The extent of the borderline country which the author explores may be indicated by the topics of other chapters which include 'Analytical Technique and the Confessional,' 'Scientific Hypnosis and the Occult,' 'Suggestion and the Factor of Faith.' Throughout the book the influence of suggestion is greatly stressed.

Child Psychology: By MARGARET W. CURTI. (Longmans, Green and Co., Second Edition, pp. vii+458. \$3.20)

This is a second edition of a book reviewed in the first volume of this *Journal*. That review was a favourable one, and the new edition increases the value of the book. Revision has been, indeed, very considerable, for eight of the fifteen chapters are either entirely new or greatly altered in planning and treatment. One of the new chapters presents the biography of a five-year-old based on an original diary, but this, unfortunately, is too general to be of much value for research workers, though it gives an admirable picture of the development of one child for the general student of psychology. Three chapters deal with a new treatment of the place of heredity in mental development. Here, in general, my own view is that Professor Curti is apt to over-emphasize the influence of environment. The last half-dozen or so chapters deal with the origins of meanings and development of speech and thinking. These and the chapter on social behaviour are very considerably revised in view of much research in recent years. Unfortunately, the difference in terminology and method of treatment from the usual British text-books will lessen the value or, at least, increase the difficulty of these chapters for the ordinary British student of psychology. Once that is overcome, however, they will undoubtedly serve as a useful guide, particularly to American literature. The criticism given in the review of the first edition ten years ago, namely, in its discussion of innate tendencies, remains here, and this is partly to be connected with Professor Curti's tendency to minimize the influence of heredity and of innate factors and to regard development too much as dependent on 'conditioning.'

C W.V.

Personality in Formation and Action: By WILLIAM HEALY. (Chapman and Hall, pp. 204. 8s. 6d.)

Many who have been attracted by Dr. Healy's patient and sympathetic studies of delinquency will welcome this delightful account of thirty years' experience in dealing with the problems of developing personality. The volume is itself the record of the Salmon Memorial Lectures delivered in 1937, and the lectures, designed to keep in memory the qualities of a finely-functioning personality, give Dr. Healy many opportunities for revealing similar traits. One notable feature of the book is the author's insistence on the technique of historical perspective in his investigation of illustrative and typical cases. In studying the phenomena of emerging personality the concepts of 'drive,' libido, borne, and the like are broken down into fundamental desires such as love of security, of novel experience, of affection, recognition, and pleasantly familiar experience. The effective and deeper causes in the shaping of personality are traced to emotional situations and family attitudes in the formative years. Dr. Healy is

of the opinion that far too little attention has been given to the study of individuals who do not present outstanding problems : it is only incidentally that we dig into the foundations of an admirable personality structure. He does not rule out paper tests, nor despise statistical analysis, but he strongly urges the need for careful clinical studies. Interesting light is thrown on certain qualities and results of American education. American parents show slight appreciation of the 'widening relationships' of the educative process ; their chief concern is for academic honours and athletic prowess. We must ever remember that the "driving forces of mental life attach themselves to ideas, and that all ideas have some affective correlates." Affective constellations operate where we would not expect to find them, during thirty years Healy has seen in judges, spreading over cases where less than major crimes are involved, anomalies of beliefs, attitudes, and prejudices so striking that as a psychiatrist "he almost aches for the chance to unravel the mystery of unconscious bias." Here is a deep problem for the consideration of democracies,

W. J. McC.

Guiding Human Misfits : By ALEXANDRA ADLER. (Faber and Faber, pp. 128. 5s. net.)

After a brief introduction on the principles of individual psychology and about childhood this book gives chapters on neuroses in childhood, problems of adolescence, social interest, the criminal, dreams and child guidance. Each of these chapters is illustrated by one and sometimes two cases, the notes on the cases treated being divided by some general discussion. The general point of view is similar to that of the father of the writer. Unfortunately it is not always clear that the notes on the patients really do justify the inferences and the discussions interspersed. The book also reveals the belief in those generalizations which Adler made about the eldest and youngest and second children which wider investigations have shown to be so unreliable. The book concludes with Alfred Adler's questionnaire to be used in the study and treatment of problem children.

Problems in Modern Education : Edited by E. D. LABORDE. (Cambridge University Press, 1939, pp. viii + 165. 8s. 6d.)

The Editor here assembles addresses given at a Conference of Young Public Schoolmasters at Harrow in January, 1938. The main theme of the conference was adventurous. The Educational, Social, and International Relevance of Christianity in the Modern World ; the addresses make up a book of two parts : one devoted to a more or less systematic exposition of Christian principles with some references to education, the other to lectures on isolated aspects of education with some references to religion. The book, as a whole, is stimulating, yet in some respects it may be depressing to those who are genuinely concerned with the practical question of religion in schools, for the arrangement and the lack of sequence are more eloquent of religious divisions than of practical ways of harmonizing religious differences through education. In view of the general conservative treatment it is difficult to accept the Editor's suggestion that the first part is the schoolmaster's 'recall to religion,' and that the second part will 'certainly refute the charges of those persons who sometimes assert that the public schools are un receptive of new ideas and out of date.' A schoolmaster's recall should surely bring us a little closer to the days when the schools exerted a unifying influence on religious forces and a little further from the present days when they too often serve, in these Islands, to perpetuate religious differences. It is to be hoped that the public schools would not regard willingness to listen to these lectures as sufficient evidence of a sympathy with progressive ideas in education.

Sir Cyril Norwood's outline of a basis for Christian education would probably find wide acceptance among conservative Christian educationists. It has, however, little or no place for the revolutionary aspects of the teaching of Jesus, or for his direct attack on the formal and conventional attitudes to religion in his own day. Sir Cyril is impressed by the fervour of Nazi youths for the force that "can make men greater than themselves." He seems to accept the position that internationally "you cannot be much more moral than your neighbours." One wonders whether the notes of progressive evolution and of the scholarly teaching of the specialist, would best capture the enthusiasm of the adolescent, or whether, true as it seems to be that we cannot escape the consequences of our neighbour's morality, we should accept so easily his moral standards. The pacifist could not agree to such an interpretation as Sir Cyril suggests. Christ Himself was willing to die rather than accept it ; the British Empire during two years of mortal struggle has not yet accepted it. Dean Inge's view of Christ preaching a lay religion, plain and unmistakable for the great issues of life, leads him to an interpretation of the Gospel message which could easily be brought into line with most forms of education which aim at the fostering of true individuality. Religion's chief concern is with individual character ; its message is to "get your values right." The Dean would bring us back to the original Gospel by the way of ethics. How he would present the Christian ethic to youth he does not discuss, but he gives us a very broad hint when he warns us against being carried away by the "callow exuberance of youth which thinks of putting the world to right when it ought to be thinking of passing its examinations." Professor MacMurray, on the other hand, is rightly concerned lest the demand for religion may mean nothing more than finding a place in the curriculum for religion as a subject among other subjects, a demand that makes religion into a fantasy, and the period of religious instruction into one where the pupil has to believe what would be incredible in every other lesson, and where demands for proof must be silenced. "What we usually call religious instruction is largely teaching people to pretend that they believe in the unnatural."

The second part of the book has pleasant, though rather superficial, contributions to great topics such as Education and Vitality, Freedom, International Education. Professor Schwarz, of Vienna, gives a useful and thoughtful outline of phases in the pupil's moral conduct and ethical attitude at various stages of development. In this second part more frequent references to 'sources' might have been made with advantage, and perhaps the reference of the subjects under discussion to the main theme of the Conference might have been more clearly focused. Even Professor Clarke's interesting paper would have gained if he had followed more closely his own excellent advice to "universalize our principles." He acknowledges his indebtedness to 'well-known authors,' but at times he accepts their pronouncements a little too easily. Thus he accepts as axiomatic Sir Percy Nunn's stand for the position that "nothing good enters the human world except in and through the free activities of individual men and women and that educational practice should be shaped to accord with that truth." But his subsequent treatment (and notably his references to Professor Hocking's views) might lead us to suspect that he would agree as readily with the statement if Sir Percy had written 'bad' for 'good.' A discussion of the truth of the substitution would not have been out of place at the Conference, and it would probably have drawn the searchlights, if not actual gun-fire, upon the arresting title of Professor Clarke's article, 'The Crisis of Freedom in Education.'

W.J. McC.

How to Increase Reading Ability: By ALBERT J. HARRIS. (Longmans, Green and Co., pp. xix+403. 15s.)

This book on the psychology and teaching of reading is intended as a guide to diagnostic and remedial methods for pupils of different ages showing weakness in various aspects of reading. The book represents a fine effort of scholarship, for, besides taking note of much pertinent research on the problem of reading, the author critically balances experimental findings with those of actual practice. The book opens with a consideration of the significance of reading disabilities for both scholastic and personality development. There then follows two very good chapters on how the normal child learns to read and the problems of reading readiness. I am glad to see that Dr. Harris stresses the importance of commencing reading through words and simple sentences, and agrees that phonics should come somewhat later. At the same time, he also indicates that few pupils will make complete progress without some phonic teaching.

I feel that one respect in which the book is lacking, for teachers in England, lies in its neglect to emphasize sufficiently the extreme importance of a preparatory period of incidental reading experiences such as are given in modern infant schools to pupils between the ages of five and six years. To some extent this may arise from the later start made by children in American schools, but even for pupils of 6½ to seven years much additional reading instruction can be accomplished through centres of interest and a sensible integration of basic activities.

After the third chapter the author proceeds to discuss "how to diagnose silent reading," but I cannot help wondering why he did not follow the more logical procedure of considering weakness in word recognition, its diagnosis and treatment, and then deal with silent reading, which is a later development dependent upon progress in word recognition. The chapter on oral reading might have been compressed and included with the later work on word recognition.

There is an excellent chapter on investigating the causes of reading disabilities, while the sections on remedial measures are most suggestive. A minor criticism of an otherwise excellent book is that in parts it is somewhat wordy. Compression of certain sections would have reduced the size of the book without impairing its general value. This would have brought its price within reach of many teachers to whom it would prove an exceedingly helpful volume.

F.J.S.

Guide to Mental Health: By H. D. JENNINGS WHITE, M.A., Ph.D. (C. W. Daniels Co., Ltd., pp. 298. 15s.)

This is an ambitious book for within the short compass of less than 300 pages the author disposes of all religions to date and presumably formulates a new one which he calls Eutrophy, though the nature of this is not altogether clear. He also entirely re-casts the theory of the relationship of mental diseases, gives them a new nomenclature and describes how to prevent and cure them.

Other professions are treated with scant respect. The doctor will be sorry to hear that "there is no positive philosophy in a medical profession, and cannot be, by definition," since the doctor is "a parasite on the diseased." He will be surprised to hear that "epilepsy can be regarded as a special type of the manic depressive cycle" and while most will agree in all humility that they cannot cure dementia praecox, they will be filled with admiration to learn that the author can always cure it.

Similarly, the minister of religion will be surprised and grieved to hear that "Hence Christian mothers tend to have mentally-defective children." He will probably agree that all religions and not least Christianity, have incorporated into their structure much that belongs to the old cults of worship of the sun and of fertility, but may not agree when they are told that Jesus is nothing but a second-hand representative of the Sun God.

It must not be thought, however, that the author does not possess a considerable store of psychological knowledge, and that there is not a great deal to be said for his desire to sweep away outworn

beliefs and unwise and misdirected inhibitions, or that he has not helped some sufferers who have submitted themselves to his treatment. It is clear that he has done so, but still we cannot conscientiously recommend this book to the neophyte or even to the more or less intelligent layman. The uninitiated may unfortunately read it uncritically and with avidity since it is easy to read and frequently lapses into the jargon of the film and the style of the popular journalist.

R.G.C.

Education for Complete Living : edited by K. S. CUNNINGHAM, assisted by W. C. RADFORD, (Oxford University Press, pp. xxx+682. 10s. net.)

This substantial volume is a record of the proceedings of the New Education Fellowship Conference held in Australia in 1937. The papers and discussions are grouped under some dozen different topics, which include 'Education and World Affairs,' 'The New Outlook in Education,' 'The Relation of Education and Social Problems,' 'Rural Life,' 'Examinations,' 'Curriculum,' 'Adult Education,' 'The University,' and 'Psychology of the School Child.'

The contributors include well-known people from many countries, and the Conference must clearly have been a very stimulating one. As a contribution to educational or psychological thought, the volume of course suffers from the fact that contributions had to be very brief; for example, Professor Hamley's discussion of 'The Function of the Teacher' occupies only four pages, and Dr. Boyd's 'Reform of the Examination System' three pages. Substantial contributions, however, include Dr. Cyril Norwood's 'Religion in Education' and his 'New Conception of Physical Education'; also Dr. Susan Isaac's papers on 'The Child's Emotional Life' and 'The Problem Child.' Dr. Boyd sums up the general impression of the Conference.

Married Life in an African Tribe : By I. SCHAPERA. (Faber and Faber, pp. 364. 15s.)

The Professor of Social Anthropology in the University of Cape Town has made here a useful contribution to the study of African anthropology. The book combines in an unusual degree the readability of a semi-popular book with the exactness and close argument of a serious anthropological study. It is of special interest in that Professor Schapera is able to describe conditions before western civilization had affected greatly the more primitive customs, and the later conditions, on which the ideas of monogamy and other Christian ideals had had considerable influence. The author gives not only a description of the customs, but also a number of personal reports of native men and women as to their experiences of all types in marriage, and their views on their relations with their mate, some of which are of considerable psychological interest. It is somewhat intriguing to find in the chapter on parents and children the heading 'The Revolt of Modern Youth.'

In the interests of national economy the margins of this number, and of future numbers, are being reduced so that the same amount of printed matter may be given on a smaller number of pages.

IS THE DOCTRINE OF INSTINCTS DEAD? A SYMPOSIUM.¹I.—THE CASE FOR HUMAN INSTINCTS.²

By CYRIL BURT.

I.—*Instincts and education.*II.—*Definition of instinct.*III—*Corollaries.*IV.—*Criteria:*(a) *Biological.*(b) *Psychological.*(c) *Statistical.*V.—*Summary and conclusions.*

I.—INSTINCTS AND EDUCATION.

DURING the last thirty years the doctrine of human instincts has played a constructive part in educational theory; and yet, for some time past, a disquieting rumour has reached the teacher's ears that, after receiving fatal blows in a hot debate across the water, the doctrine has died an unexpected death. Students of child psychology, therefore, have begun to ask what precisely they should believe; and to them, and to all who are engaged in the training of young children, the editor's proposal that psychologists of different schools should join in a *post mortem* inquiry will be particularly welcome. In Poe's gruesome story, it may be remembered, as soon as the surgeon's scalpel touched the heart, the corpse sprang from the operating table, and manifested every sign of life.

The prominence of instinct in modern educational discussions arises chiefly from two recent changes in the attitude of teacher to pupil. First of all, it has been more and more realized that the aims of education should include, not only the instruction of the pupil's intellect, but also the training of his character. Education authorities have come to regard themselves as concerned with the whole welfare of the child—with the prevention and treatment of moral delinquency, for instance, quite as much as with the prevention or treatment of backwardness and mental deficiency. If, therefore, as many have maintained, the primitive instincts which we all inherit from our animal ancestors form the foundations of individual character and the commonest sources of juvenile

¹ *Editorial Note.*—This is the first contribution to a symposium which the editor has arranged on instincts. Since the famous symposium of 1910 (in *The British Journal of Psychology*, Vol. III) there has been considerable criticism, particularly by some American psychologists, of the use of the concept of 'instinct' in the psychology of human beings. In view of the great importance of the subject for educational psychology, the editor thought that a discussion by some of our leading psychologists would be of great value. He is glad to say that he has secured the co-operation of the following: Professor C. Burt, Professor J. Drever, Dr. C. S. Myers, Professor T. H. Pear, Dr. P. E. Vernon, and possibly one or two others. In addition, a forthcoming article on "Sublimation," by Professor J. C. Flugel, will have an important bearing on the general topic. Thus the subject will be discussed from various points of view, e.g., the educational, Freudian, behaviourist, and the general view represented especially by McDougall. The second paper, by Dr. P. E. Vernon, will appear in the next number of this *Journal*, and it is hoped to complete the series by the November number of 1942.

² I am much indebted to my colleague, Dr. S. J. Philpott, to Dr. P. E. Vernon (who, I understand, is to follow me in this symposium), and to several teachers of experience, for their kindness in reading my contribution, and giving me the benefit of their comments. I have endeavoured to meet their criticisms by adding one or two explanatory footnotes.

crime, an adequate theory of character-training should rest on an acceptable theory of instincts. Secondly, it has been increasingly recognized that even the ordinary instruction of the classroom will not be fully effective, unless, consciously or unconsciously, it is animated by appropriate motives. In the past the teacher assumed that every normal child would be inspued by a rational sense of duty, and that, with the disobedient few, an appeal to fear would suffice. Newer educational methods have brought newer types of incentive; and, if the psychologist can demonstrate that all pupils come into the world with a known equipment of primitive motives, then the task of the teacher will become far easier, provided he is informed what these universal motives are.

Instinct is primarily a term of animal psychology. Its introduction into human psychology dates from Darwin, who first taught us to seek a biological interpretation of man and his behaviour. In pre-Darwinian psychology, *homo sapiens* was allotted a unique faculty of reason: other creatures, being deprived of reason, were endowed by a just Providence with a ready-made outfit of instincts instead. But so sharp an antithesis was quite as unfair to the powers of learning shown by animals as it was to the unlearned elements in the conduct of civilized man. All animals—all at any rate that possess a complex nervous system and seem guided by something akin to consciousness—manifest both instinctive behaviour and what may be called experimental behaviour; and, since instinctive behaviour is always in some degree plastic and adaptable,¹ the line between the two is not easy to draw. Creatures which have arisen later in the evolutionary scale show a longer period of immaturity or youth, during which experimental behaviour is more prominent than instinctive. They belong to species whose nervous systems show greater centralization, greater complexity, and greater size, especially in the unorganized areas (the so-called neopallium); their early life is characterized far more by a varied and an exuberant energy than by a fixed and stereotyped routine. During this dependent phase the cruder activities which they inherit become greatly modified and extended, often under the tuition of their parents or of other members of their herd.

Man has a longer period of youth, and reveals a greater measure of plasticity, than any of his precursors. Nevertheless, the gap between educable man and the more intelligent apes and carnivora is not wider or more conspicuous than the gap between these and the older mammals, or the reptiles and batrachians from which they are descended. If, therefore, we agree that the human mind has been evolved from the animal mind, we shall be tempted to surmise that the differences in innate mental constitution, glaring though they seem at first sight, are differences of degree rather than of kind², and thus, as educationists, we are led to inquire "whether man may not have carried these instinctive modes of behaviour upward with him in the course of his evolution, and whether they are not still the basis of his complex existence." If so, as Sir Percy Nunn has argued, "the comparative fruitlessness of so much educational effort may prove largely due to the neglect of these proximate sources of human energy—the real springs of educational progress, alike in conduct and in learning."

II.—DEFINITION OF INSTINCT.

In this country the majority of theoretical psychologists—Stout, Rivers, Myers, Shand, Drever, Aveling, Ginsberg, Godfrey Thomson, Thouless, Ernest Jones—have all

¹ See p. 159, footnote 3.

² Cf. DARWIN. *Descent of Man* (1888), Vol. I, p. 101.

given, with various minor qualifications, an affirmative answer to the question thus raised, and have unanimously endorsed the view that human behaviour in its origins is largely instinctive.¹ I have myself endeavoured to show that the application of this doctrine proves extremely fruitful in educational and individual psychology, most of all perhaps in clinical work.² On the other hand, a number of American psychologists, and several younger psychologists in this country who have been influenced by American work, have launched a vigorous attack on the whole doctrine. Instinct, it is argued, is one of those vague, reifying, question-begging terms, which should be banished from a scientific vocabulary, along with other relics of mediaeval mysticism, such as 'faculties,' 'souls,' and teleological principles generally. If we give up Darwin's assumption that habits learned by individuals tend ultimately to become hereditary, what reason have we for believing that man possesses any important behaviour-patterns other than those that have been learned during the individual's lifetime? "The long lists of human instincts may now therefore be thrown on the dust-heap."³

In the face of such contentions, the first step is obviously to decide what exactly the term 'instinct' is to mean. Much of the controversy is purely verbal: psychologists are far more agreed about the facts than a teacher reading their pronouncements might infer. Their disputes turn rather on the choice of names to be used in interpreting the facts, and on the precise significance to be attached to the terms rejected or selected. In this paper the definition that I shall propose is based on that of McDougall, since it is his use of the word that has led to the most prolific and suggestive applications of the notion to human affairs, and his interpretation of the word that has been for the most part adopted by those who have so freely employed it. The minor amendments that I shall venture to make are designed to dispense with needless subsidiary assumptions that have been largely responsible for misconceptions and objections.

By an instinct I understand a complex inherited tendency, common to all members of a species, compelling each individual (i) to perceive and pay attention to certain objects or situations, (ii) to become pleasurable or unpleasurable excited about those objects whenever they are perceived, and (iii) thereupon to act in a way likely in the long run to preserve the individual, or at any rate the species, so acting. The tendency is necessarily threefold: cognitive, affective and conative, because all concrete mental tendencies

¹ W. McDougall's *Introduction to Social Psychology* (1909 12th edition, pp. 19-120, 385-424) has been most influential in spreading the notion that instincts are the primary basis of all human conduct. But his account was admittedly to a large degree an extension and systematization of that of W. James, *Principles of Psychology* (1901), Vol. II, pp. 383-441, and was greatly influenced by Lloyd Morgan's earlier work on *Habit and Instinct* (1894). In his latest writings McDougall preferred to substitute the term 'propensity.' For the views of leading British psychologists see the "Symposium on Instinct," *Brit. J. Psych.*, III (1910), pp. 209-270, and the two suggestive papers by G. C. Field, *Mind*, XXX (1921), pp. 257-70, XXXI (1922), pp. 129-143.

² In an early paper ("Psychology and the Emotions," *School Hygiene*, May, 1916, pp. 1-14) I endeavoured to urge the importance of training the instincts and emotions in young children by a greater emphasis on social, aesthetic, play activities during the school period, and the advantages of exploiting such motives in teaching the more intellectual subjects. For a fuller discussion of the educational importance of instinctive and emotional tendencies, see Keatinge, *Studies in Education* (1918), esp. Ch. V; Adams, *The New Teaching* (1918); Thomson, *Instinct, Intelligence and Character* (1924); Nunn, *Education Its Data and First Principles* (1930), esp. pp. 151-160; Hughes, *Teaching and Learning* (1937).

³ The fullest and most drastic criticisms have been those of L. L. Bernard, *Instinct a Study in Social Psychology* (1924). E. L. Thorndike's earlier criticisms are to be found in his *Educational Psychology*, Vol. I, *The Original Nature of Man* (1913); those of J. B. Watson in *Behaviourism* (1924), pp. 74-107, and other writings. An excellent survey of the whole debate is to be found in G. Murphy's *Historical Introduction to Modern Psychology* (1929), pp. 336-346.

possess this triple character. To restrict the word to one aspect of mental process only, namely, to overt actions, as distinct from the feelings and the perceptions that accompany or immediately precede those actions, seems to me as wrong as it is unhelpful. And it is still more fallacious to try to limit it to actions that are *wholly unlearned*.¹

An instinct, then, is far more than a particularly complicated reflex. "The difference is that instinctive conduct does, and reflex action does not, pre-suppose the co-operation of consciousness"—that is, of cognitive attention, of emotional interest, of conative variation according as the immediate outcome leads to feelings of satisfaction or dissatisfaction—all tending to produce widespread modifications of the original behaviour as a result of repeated experience. Instinctive action is thus essentially a manifestation of mental energy: it involves an urge, a drive, a determined striving. Reflex action, however complex, is as mechanical and effortless as a well-practised habit. Instincts, therefore, are no mere substitute for learning; they have an educative value as conditions of learning along certain specifiable directions.²

If the reader asks for a concrete example, I suggest that he consider the instinct of sex. The sex-behaviour of the civilized adult is largely artificial and acquired. Yet the tendency to notice persons of the opposite sex, to feel more or less emotionally perturbed by their presence, and to aim (perhaps on the first occasion in complete innocence of the aim, perhaps, too, by a prolonged and devious course of action) at an eventual consummation of the reproductive process, is almost universal; it seems to arise in every individual more or less spontaneously, and often in spite of strenuous efforts to suppress it. To account for such a tendency without assuming that we have inherited it from our animal ancestors would appear as difficult as it is far-fetched.³

A word of comment is perhaps necessary on alternative definitions. At the moment the best-known and perhaps the most impartial account is contained in Woodworth's

¹"When the noun *instinct* is used, we assume it to refer to some definite action pattern that is *wholly unlearned*" (Woodworth, *Psychology*, p. 220). This expresses the standpoint of Watson and the behaviourists. Their favourite argument amounts to this. An action is either learned or unlearned. If it is unlearned, it will be observable at birth. If it is not observable at birth, it is learned; and therefore cannot be instinctive. Should anyone maintain that, though delayed, it may be *partly* unlearned, the onus lies on them to adduce empirical evidence that its ultimate appearance is due to "later growth-changes in structure." Such empirical evidence is naturally difficult to find, if it is further assumed that the unlearned element must still consist of overt movements as distinct from what I have called feelings or tendencies.

²Cf. STOUT and MACE, *Manual of Psychology* (1938), p. 335, and STOUT, *Brit. J. Psych.*, I o., p. 248. In his earlier article, however, Stout inclined to the view that the term *instinct* should be confined to activities that involve ready-made-movements, and consequently that in human beings "there are hardly any well-marked instincts as distinguished from special capacities for learning"; hence his earlier editions of the *Manual* contained no chapter on *instinct*. The behaviourists' attempt to reduce so-called instincts to compound reflexes and chain reflexes of high complexity are part of their attempt to banish all that is peculiarly psychological from psychology. So far as they are successful, they really show that reflexes resemble instincts rather than that instincts resemble reflexes. As Sherrington, for example, points out, even the 'unconditioned reflex' as studied by Pavlov is often "but one component of an immense reaction with emotional and other mental accompaniments" (*Psych. Rev.*, XXXVII, 1930, p. 218).

³This example serves to illustrate several points that seem often to be overlooked, or at least under-rated, by McDougall's account. First, the physiological mechanism does not consist solely of the neural mechanisms: in particular, the emotional energy is not due simply to the immediate liberation of extra neural energy within the nervous system itself, but is dependent partly on visceral stimulation, and partly on the access of energy derived from the stimulation of the endocrine glands. Secondly, there are at least two emotional states correlated with each instinct, (i) that which is commonly aroused when the instinct is excited (especially if it is not immediately satisfied); and (ii) that which finally supervenes when the instinct is satisfied; the latter, in my view, may play a crucial part in conditioning and modifying the initial activities.

text-book.¹ "Instinct," he writes, "is best defined as unlearned behaviour." But the word should surely be used to denote, not the behaviour itself, but the 'propensity,' the 'impulse,'² or (as I should prefer to say) the 'tendency' to such behaviour. If we confine the word to the actual behaviour, we shall naturally argue, as Woodworth does, that in man very few 'action patterns' are wholly 'unlearned'; and with him we shall rightly conclude that "it is doubtful whether it is worth while to use the term instinct at all in human psychology": the term, he contends, is "primarily a term for use in animal psychology." Yet if we accept the definition as he words it, we shall be compelled to question its value for animal psychology also; for recent investigation has amply shown that, even in animals, behaviour complex enough to be called 'instinctive' (rather than simply 'reflex') nearly always includes some element of learning and experience.³ He submits, however, a second definition: "an instinct may be thought of as a basic motive to action, even when the action itself is learned." This definition—with the implications (conveyed by the context) that 'basic' means 'unlearned,' and that 'motive' includes 'activity directed to an end' as well as the mere stimulation of activity—I should readily accept.

Of the general view I have proposed, the strongest criticisms will no doubt be advanced by psychologists of the Behaviourist School. My definition, they will doubtless argue, begs the question. First, they will say we have no right to postulate the existence of perceptions and feelings in the animals or persons that we are observing: a strictly scientific attitude demands that we keep exclusively to observable stimuli and observable responses. And, secondly, and for much the same reasons, we have no warrant for introducing such immaterial concepts as purposive tendencies or motives. If then the only 'responses' we are permitted to recognize are definite actions or definite action-patterns, it becomes easy to prove that "there is no such thing as the inheritance of temperament, capacity, mental constitution, or mental characteristics," and *a fortiori* that "all so-called instinctive behaviour is really learned behaviour."⁴

¹ *Psychology* (1921), pp. 218, *et seq.*

² *Oxford Dictionary*, s.v. A critic, commenting on this paragraph, observes: "When these writers describe an instinct as an action or movement, is not that merely idiomatic shorthand for capacity for such action or movement, meaning by capacity an organized structure in the brain? And surely we need an expression for that." I agree—and the obvious expression is 'motor mechanism.' My point, therefore, is that Watson and others confuse the issue by substituting the word 'instinct.' If they would be content to argue 'Man, unlike the lower animals, inherits only a very few motor mechanisms,' I should readily accept their statement. Thouless puts much the same point when he writes: "It seems better to reserve the word instinct for the energy which seems to seek a goal and to use a variety of motor mechanisms for its attainment." (*General and Social Psychology*, p. 35.)

³ The text-books are a little misleading in citing as typical instincts the rigidly stereotyped actions of certain insects—actions which even in abnormal conditions remain so fixed and unmodifiable as to appear 'abyssmally stupid' as well as blind (e.g., the web spinning of the spider, which, when carried out in a glass bottle, produces, not an elegantly constructed net, but a futile tangle of threads). Those writers who, like Bergson and Driesch, have popularized the notion that an instinct is "a complicated reaction perfect the very first time" seem to have relied for their facts largely on the somewhat biased descriptions of earlier observers like Fabre. Actually this lack of adaptability proved to be the exception rather than the rule. Closer study of insects under natural conditions reveals an appreciable power of learning (cf. Darwin's account of the snare spun by the spider *Epeira* and of the honeycomb reconstructed by the hive-bee, the Peckhams' account of the activities of the solitary wasp, and the more recent observations cited by Kingston, *Problems of Instinct and Intelligence*, 1928).

⁴ WATSON: *Behaviourism* (Ch. V, 'Are There Any Human Instincts?'). In earlier writings Watson adopted a broader view. In his text-book on *Psychology from the Standpoint of a Behaviourist*, he summarizes 'the role of Instincts in man' by saying, "though perfect instincts in man be few, his wealth of abortive and instinctive tendencies is quite important." Thus "most of the asserted instincts are really consolidations of instincts and habits"; if I could accept his limitation of the term to instinctive 'movements' as distinct from instinctive 'tendencies,' I should be the last to question such a statement.

In a discussion intended primarily for teachers, it would be out of place to embark on the fundamental issues of purposive explanations as supplementary to physico-chemical, or of teleological principles as contrasted with purely materialistic. It will be sufficient to say that most teachers would find it impossible to describe their own activities, or those of their pupils, without invoking such concepts as perceptions, feelings, and purposes. Watson declares that all such words 'introduce an air of mediæval occultism.' What I call 'tendencies' Watson prefers to call 'laws'; what James calls the 'stream of consciousness' Watson calls the 'activity stream.' But, as Watson uses them, I find these terms more 'occult,' not less. To ignore the fact that human tendencies are felt tendencies does not make it any the less a fact, to drop out all reference to consciousness does not make it any easier to understand our conscious actions.

At the same time I agree that, in acknowledging the presence of feeling and consciousness, we must not suppose that we have thereby found a satisfying causal explanation of the processes they accompany. Let me add, therefore, that the word 'purpose' is here required merely to describe a fact, not to explain it. Mental activities are directed activities, not activities which can be expressed in terms of magnitude alone. The typical response to a stimulus is not a 'reaction,' but a reactive process—that is to say, a series of changes, forming a unity in time, which cannot be intelligibly described without reference to its final or culminating stage. The purposive tendency of such a series of changes may be directly perceived, much as we perceive motion when a succession of photographs is thrown on the cinema screen. Watson's analytic descriptions wholly omit this unifying feature. If a child or animal is tightly held, the creature (he says) reacts by stiffening the muscles of its trunk, making slashing or striking movements with its arms and legs, etc., etc. His analytic bias makes him blind to what seems so obvious to the naïve observer (whose untrained eye might miss the detailed movements), namely, that the creature is primarily struggling to get free.

Let me add that if the word 'purpose' be held to connote a consciously apprehended purpose (which I should prefer to call an 'intention'), or to suggest that this consummation is in some mysterious fashion the *cause* of the process, then I should be ready to seek some other name.¹ As I use it here, the term 'purpose' merely makes a prediction: it prophesies what is likely to be the result. The goal of a poppy seed is to develop into a particular kind of plant: the very epithet 'poppy' implies such an end-result; nor can we signify what seed it is without referring to this probable outcome. Such facts may be difficult to formulate without introducing unwarranted notions, like the 'designs' of nature or the 'unconscious wishes' of the individual; but these are difficulties in no way peculiar to the discussion of instinct, and they are difficulties which materialistic explanations do not solve but merely shelve.

¹ In retaining the word 'purpose' in this sense I am departing from the usage of many psychologists, e.g., Woodworth "Though the word 'purpose' is sometimes used so broadly as to cover any activity directed to a definite end, it is better reserved for cases where the end is anticipated by the individual acting" (*Iloc.* cit., p. 243). My excuse is that we already have another term to denote the second meaning, and no term so convenient to denote the first. The word 'end' may be equally misleading, because the culminating stage need not be 'final' in the sense of 'last'; it is the climax rather than the termination. For the same reason I cannot accept as a complete explanation Stout's suggestion that physiologically this culminating stage consists simply in the recovery of equilibrium; or the Gestaltist's suggestion that all can be explained by 'closing the gap' between two systems of high tension. As may be noted in states of rest, sleep, or death, equilibrium and loss of tension more frequently succeed the culmination than synchronise with it.

Watson's own definition is that an instinct is "an hereditary pattern reaction, the separate elements of which are movements principally of the striped muscles." The 'pattern' is to be specified in terms of the separate muscular contractions that compose it: if different striped muscles are contracted, then the pattern must constitute a different instinct. I, on the other hand, would maintain that the pattern cannot be wholly defined by enumerating the striped muscles involved in the activity, but must include the final goal or purpose towards which the activity tends. A few instances may make my contention clearer. Since the movements made by human beings in going to bed are so widely different, it would seem to follow from Watson's postulates that the impulse to go to sleep when tired cannot be hereditary in man. Or consider an animal crippled at birth—a puppy that has lost one fore-leg: it fights, runs away, cleans itself, and later carries out the sexual act, with a pattern of muscular contractions wholly different from that of the intact creature: since the muscular pattern is so different we should seem forced to conclude that the actions of the maimed dog are in no way the results of instincts. Most birds take weeks to learn the movements required for flying; but swallows, it is said, fly almost perfectly on the first attempt. If we are to recognize only instinctive movements, and reject such a notion as instinctive tendencies, we must say that swallows alone inherit an instinct of flight and that other birds are as devoid of it as the proverbial pig. Of the kittens I have had in my rooms, some will jump up, but hardly ever climb up; others, the Siamese, for instance, have a passion for trying to climb everything climbable, but the different movements have to be learnt. In the latter, therefore, what I should call the instinct to climb involves, not a pattern of muscular movements inherited as such, but rather a general impulse to *attempt and learn* such movements. Actually, after their initial protests, few behaviourists get very far without tacitly re-introducing similar teleological implications into their own concrete descriptions. Having banished them from the descriptive noun, they smuggle them into their descriptive adjectives. So-called 'instincts,' they tell us, are to be regarded as nothing but mechanical 'reflexes': so the instinct of curiosity is re-named the 'investigatory' or the 'what-is-it reflex': we even hear of a 'freedom reflex.' But how can we describe the 'pattern' of such a reflex in terms of striped muscles only, and with no reference whatever to the end towards which the muscular efforts are directed?

All these paradoxes arise mainly from the over-simplified physiology on which the behaviourists, in the interests of 'scientific economy and precision,' continually insist. To begin with, they describe behaviour almost exclusively in terms of properties of the behaver, rather than as an ever-changing pattern of relations between the behaver and his environment. Secondly, they formulate these properties almost exclusively in terms of the anatomical connections between 'receptors' and 'effectors'—which is rather like attributing the melodic patterns heard over the wireless to the patterns of the wires inside the receiver. Thus everything is explained by purely structural concepts. Personality becomes a 'machine put together out of parts.' The brain is depicted as an aggregate of 'conductor-paths,' rather than as a dynamic field of interacting processes, and is supposed to operate like an elaborate telephone system, with certain connections already laid down at birth, and others, quite separate, only laid down as a result of subsequent experience. This simplified picture may be helpful enough for teaching purposes with elementary students: but it surely should not be accepted as the sole permissible scheme in terms of which living behaviour is to be interpreted.

It is for much the same reasons that I cannot accept McDougall's definition as it stands. My own definition departs from his chiefly in substituting the phrase 'inherited tendency' for 'innate psycho-physical disposition.' With McDougall the word 'disposition' means a 'structure,' a structure that is neural as well as mental, a 'system of neurones . . . which is at once a source of energy and a set of channels through which the energy is directed,' in a word, an anatomical mechanism. Now physiological considerations may suggest, and physiological research may eventually show, that these innate tendencies can be explained, partly, though not, I imagine, wholly, in terms of innate neural structures. But such a conclusion is something additional, for which definite evidence will have to be adduced : it is not an explanation which can be taken for granted from the outset by the very phrasing of our definition.

The idea that an instinct is nothing but a neural mechanism was suggested by the nineteenth century teaching in regard to reflexes. Reflex actions seemed explicable by reflex centres, located for the most part in the spinal cord ; and in the same way instinctive actions, which, according to Spencer and others, were simply compound reflexes, could be accounted for by postulating 'higher subcortical centres' for each of the several instincts. We now realize that these efforts at explaining bodily and mental behaviour by localized neural structures were largely mistaken. The neurologist of to-day seeks explanations that are physiological rather than purely anatomical, functional rather than purely structural.¹ A reflex is no longer thought of as the self-contained result of stimulating a definite co-ordinating centre, but rather as an item in the total outcome of the highly complex patterns in which the interacting currents of nerve-energy tend to flow. A child does not come into the world with an assortment of isolated reflexes, which have ultimately to be co-ordinated into a consistent activity of the body as a whole. In spite of the statements so frequently reiterated in behaviourist text-books of education, very few of these reflex actions are really 'perfect at birth,' or operate, in the intact living individual, like the self-contained unit-mechanisms reported in experiments on decapitated or decerebrated animals. From the very start the behaviour of the growing child is integral, though not completely integrated. Then, as the infant slowly matures, the more specific reflex movements crystallize out from the seemingly chaotic squirming and wriggling of his whole body and limbs, as he lies in his cot.

The recognition that human activity is from the outset an intricate unity renders the task of describing it exceedingly difficult. The writer is faced with a dilemma : if he does full justice to the complexity of the facts, his description must be as complicated as they are ; if, on the other hand, he resolves to keep his account intelligible to the non-technical reader, he is apt to over-simplify. For purposes of clear and brief exposition, McDougall and those who have followed him have tended to depict instincts as sharply-demarcated tendencies² : and it is this over-simplification that has perhaps made such

¹ A critic, reading this paragraph in draft, has asked : "What precisely I propose to substitute for the behaviourist's conductor-theory of nervous energy?" In the present stage of our knowledge I hold that there is room and need for a separate branch of psychology which I would call 'psychodynamics,' having much the same relation to 'neuro-dynamics' as the classical dynamics of masses has to the atomic physics of quantum theory. Like the former, it would be essentially statistical. I have no space here to discuss the problem in full : I briefly indicated my view in an earlier number of this *Journal* (IX, pp. 191-9).

² I myself have not wholly escaped a challenge on this ground. In my book on *The Young Delinquent* I drew attention to the parallel between the commoner delinquencies committed by the young or the dull and the current classification of human instincts : and then proceeded to illustrate the more important instinctive actions under a series of separate heads. Such analyses are inevitably open to the

versions popular with the teacher and the general public, and at the same time provoked violent onslaughts from the more critical specialist. But, because a hypothesis is open to correction in its first simple outlines, that is no reason for repudiating it altogether.

III.—COROLLARIES.

As defined above, the value of the concept 'instinct' to the practical psychologist—educational, social, or medical—seems unquestionable. First of all, it insists on the fact that human beings come into the world with certain innate or unlearned tendencies. Because these tendencies are part of the hereditary equipment of the race, we can always assume that they are present in any individual with whom we have to deal. The psychologist, therefore, in his efforts to diagnose character, can begin by assessing the contributions of these fundamental motives, which he knows to be inborn in every child alike, though with varying degrees of strength. If these tendencies are implanted at the outset, we cannot afford to ignore them; for they are bound to condition the individual's development whether we acknowledge them or not.

The doctrine is thus in sharp conflict with the older educational theories which conceived the child's mind as a *tabula rasa*—as a piece of shapeless wax or putty which the parent or the teacher could mould as he wished. This part of the doctrine, I imagine, would be accepted nowadays by almost every psychologist and educationist.¹ So far as the facts are concerned, the dispute—except perhaps in the eyes of one or two extremists—turns chiefly on the question of degree. Few who reject the notion of an instinctive component would go so far as to maintain that the activities of sex, hunger, fear and the like are wholly due to personal experience or to the cultural background. Nor would those who wish to preserve the notion of instincts deny that human conduct owes far more to individual learning and to social transmission than does the conduct of any other creature. The point at issue, therefore, is not whether environment contributes everything, while heredity contributes nothing, nor even whether there is any action totally uninfluenced by learning, but simply what is the relative importance of the two.²

charge of "disrupting the personality into separate bits." In deprecating such a 'disruption' I am entirely at one with my critics. Indeed, to forestall any such misunderstanding, I expressly insisted that the activities described were not to be thought of as divisible into self-contained sections like the description itself. "Human life," I added, "must not be regarded as a composite of clean-cut blocks, . . . life is a single, flowing stream, not an aggregate of discrete faculties or unrelated reflexes. The several emotions themselves are but specialized differentiations of a primal emotional energy—a fundamental will to live" (*The Young Delinquent*, 1925, p. 423). Watson's notion of an 'activity stream' (*Behaviourism*, 1931, p. 187) seems to emphasize much the same point, although the 'action systems' into which he subdivides it are still more 'atomistic.' But the difficulty is methodological rather than psychological; and the attacks that are supposed to have killed the doctrine of instincts are but special instances of that ancient type of criticism which is always being brought against our tentative endeavours to classify the blurred phenomena of nature into convenient distinguishable types (see p. 167, footnote *).

¹ Watson very nearly reverts to this position. In phrases echoing the claims of Robert Owen a century ago, he 'guarantees' to take any healthy child at random, and, with his "own specified world to bring him up in," to train him to become "any type of specialist we might select—doctor, lawyer, artist . . . regardless of his abilities, tendencies," etc. (*Behaviourism*, p. 104). No wonder that an educational reviewer, commenting on this passage, exclaims that he "stands blinded with a great hope."

² This is clear from the incidental remarks of writers like Bernard, who are supposed to have demolished the doctrine. "Instincts are of secondary importance in the motivation of social conduct. . . . We do not give our pugnacious, sexual, gustatory, fear, and gregarious impulses free rein . . . Environment even utilizes instinct in the service of its own ideals" (*loc. cit.*, p. 27; *id.*, *Introduction to Social Psychology*, p. 139). Such statements in no way conflict with McDougall's, since even he contends that, in the motivation of social conduct, the influence of the instincts in their primitive form is secondary to that of the sentiments and ideals into which they are organized and sublimated.

Secondly, since unlearned motives are in the first instance unconscious motives (that is, they operate, at the outset, without any conscious appreciation of the reasons for the actions they prompt), the doctrine does much to explain the irrational and the non-rational elements in our common human nature. Furthermore, just because he is unconscious, or at any rate but dimly conscious, of the ends and the appropriate means, although the ends themselves are biologically the most vital, each individual (if he is to survive) must be equipped with reserves of extra energy that are automatically released at times of special crisis. As a result, these unlearned impulses are the most powerful of all; and the accompanying emotions, as every novelist and dramatist reminds us, provide for most of us the mainsprings of our daily conduct. And yet, since learned habits never become hereditary, though acquired and re-acquired generation after generation, the unlearned motives that the tiny child inherits remain to this day more suited to prehistoric conditions than to life in a civilized community. The doctrine of human instinct, therefore, is the biologist's version of the doctrine of original sin. Hence its special importance for abnormal psychology, particularly the abnormal psychology of childhood. Nor is it surprising to hear the psycho-analyst announce that "the study of instinct is the most fundamental in all psychology."¹

Thirdly, while insisting on the general fact and on the general importance of unlearned components in human behaviour, the theory of instinct goes further: it enables us to classify these innate components under a number of more or less specific heads. Hitherto, the educationist, the sociologist, the economist, the moralist, and even the psychiatrist have had to improvise each his own arbitrary list of universal human motives, like an independent amateur, as he goes along. Even now orectic psychology displays a confusion and a muddle which cognitive psychology has long ago overcome. In studying cognitive activities, the practical psychologist now possesses a working set of relatively independent capacities, which he can, if necessary, attempt to measure or test—general intelligence, specialized abilities, like verbal facility or manual dexterity, the various forms of sense-perception, of imagery, of memory, and so forth. But on the affective or conative side, there is as yet no comparable scheme which psychologists accept with reasonable unanimity. Each observer who investigates what he calls a 'personality' has a lengthy catalogue of questions which he seeks to answer; these, however, differ enormously from one observer to another, and seem to involve no method, no order among themselves, no general principles of deduction. In dealing with the intellectual aspect, once we have measured a child's innate intelligence we can forthwith deduce, with varying degrees of probability, a series of further facts about his future intellectual performances; or, again, once we have discovered that he is, or is not (say), a vivid visualizer, we can infer a number of other probable conclusions about his inner mental life. But in dealing with the temperamental aspect we possess no such systematic basis for practical deductions. Most investigators accordingly assume that the only way of covering the whole personality is to inquire directly about each particular point, working through a detailed questionnaire that may perhaps comprise upwards of a hundred items or more.

If, however, we believe that human beings inherit between one and two dozen bundles of instinctive tendencies, and that the strength of each bundle is also innate and may vary more or less independently of the strength of the others, then we at once

¹ ERNEST JONES: "The Classification of Instincts," *Brit. J. Psych.*, XIV (1924), p. 258. Cf. FRASER, *Beyond the Pleasure Principle*, pp. 41, 64: "No knowledge is so important for the establishment of a sound psychology as an approximate understanding of the Instincts."

gain a practicable scheme of classification and inference. Granting, for example, an inherited instinct of fear, we could infer that, because we have noticed a child starting and turning pale at a sudden noise, he will therefore very probably be afraid of large animals, of strange human beings, of novel situations, and of all the other stimuli for fear; on the other hand, we should not be so disposed to infer that he will be bad-tempered, or self-assertive, or prone to merry laughter, because these types of behaviour have but little correlation with the first.

It will be evident that these three corollaries furnish three main problems for investigation. First, what tendencies are inherited? Secondly, what is the relative strength of these tendencies? Thirdly, do any of these tendencies vary together in their relative strength, in such a way that we may treat each jointly varying group as a single general tendency, more or less distinguishable from the rest?

IV.—CRITERIA.

(a) *Biological*.—In deciding what tendencies are innate, three lines of evidence may be considered: biological, psychological, and statistical. In the past, writers have relied chiefly on biological criteria. Those that have been commonly put forward are the following. It will be seen that they differ widely in cogency and value; and lead to no clear answer to the second and third questions formulated above.

(1) The possession of appropriate *organs*. Many instinctive activities require special organs, e.g., sex-organs for reproduction; vocal organs for speech, claw, hand, or beak for prehension; horns, spurs, or talons for fighting. But it is to be noted that certain organs, e.g., the legs or the hand, can be used for many different purposes; so that here, as elsewhere, there is bound to be much overlapping.

(2) The appearance (a) of certain more or less specific *interests* (i.e., tendencies to attend to certain objects, situations, or aspects of situations), (b) of certain more or less specific modes of emotional excitement, or *feelings*, in the face of these situations, and (c) of *actions* more or less appropriate to them, all arising in the individual *spontaneously*, i.e., without prior experience of the situations or prior learning of the actions, and consequently without any prevision either of the importance of those situations or of the ends at which the actions aim. Appearance *at birth* is taken to be almost conclusive proof of spontaneity; and appearance *at an early age* as almost equally conclusive, if the intervening period has afforded no opportunity for learning.

(3) The appearance of similar actions, interests and modes of excitement in the whole *species*.

(4) The appearance of similar actions, interests, and modes of excitement in *lower animals*.

(5) The appearance of such actions, interests and modes of excitement in a more intensified form in certain *races, groups or families*

(6) The appearance of such actions, interests and modes of excitement in an abnormally intensified form in certain *mental disorders* (e.g., anxiety-states, sex-neuroses, anger-neuroses, manic and depressive states, etc.).

(b) *Psychological*.—In man the overt movements are very rapidly modified, if not largely suppressed. Hence the attempt to observe outward and visible actions is not so conclusive in human beings as it is in animals. But we may still observe (directly in ourselves and indirectly in others) the associated feelings: for, although the major overt movements are mostly under so-called 'voluntary control,' the visceral or glandular changes which form the basis of the emotional excitement, and the vocal and facial changes which express that excitement, are neither so radically modified nor so readily suppressed. It is this interpolated loopline to the viscera and glands which supplies the instinctive response with its additional energy and persistence. Hence in man the study of emotional impulses becomes of much greater importance than the study of muscular reactions; and I am tempted to subjoin these further criteria, which are more specifically psychological.

(1) Actions which, though different among themselves, are nevertheless, as introspection shows, attended by much *the same feeling or emotion*, may be grouped together under the heading of the same general instinct. Thus, a large number of very different quasi-reflex impulses are accompanied by feelings of anger; another set are accompanied by feelings of fear. Accordingly, we may provisionally class the former together as part of one complex tendency, and the latter together as another, while keeping the two distinct.

(2) A consideration of the conative tendency, which the emotion appears to embody, will often help us to define the ulterior *biological purpose or end* more easily than a consideration of the overt actions. Each emotional tendency is aroused by a specific situation or object (or by a number of alternative, but somewhat similar, situations and objects); each is usually satisfied by some equally specific situation. Usually, too, each leads automatically on the first occasion to some immediate line of action, which has an appreciable probability of transforming the first or stimulating situation into the second or satisfying situation. Nevertheless, as we have seen, when this consummation is not at once achieved, the action may there and then be varied, apparently spontaneously; and, with increasing experience, it is likely to develop into a set of learned or habitual reactions, possessing higher probabilities of effecting the requisite change. Hence the observable actions in themselves are not so distinctive. They can, however, be grouped together in sets, each tending to fulfil one and the same end. By these ends, therefore, the main instincts may be defined.¹

(3) Among the bodily actions to which each emotion leads there is often a distinctive *facial and vocal expression*, which commonly remains discernible even when no other movements occur. That these expressive patterns are in their origin inherited, and not acquired, can scarcely be questioned: before self-control has suppressed the other components, they appear as part of the total bodily reactions. It follows that these facial or vocal changes may themselves serve as clues to classification. Those bodily reactions that are accompanied by the same facial (and vocal) expression may be treated as a single functional group, and kept apart from those other bodily reactions that are accompanied by different facial (and vocal) expressions. The validity of this principle is confirmed in various ways. In the practical psychology of everyday life, for instance, we regularly note these emotional expressions, and find in them some of the most helpful keys to the diagnosis, not only of transitory feelings, but also of more permanent moods and motives.² Indeed, wherever a vocal or facial expression is inherited by a gregarious species as part of its instinctive reaction, other members commonly inherit a complementary tendency to recognize that expression instinctively, apart from all training or experience.

On the basis of these biological and psychological criteria many writers have attempted to draw up an inventory of the chief human instincts. The lists thus compiled, however, seem at first sight to diverge very widely from one writer to another; and all have been drastically criticized, often from quite opposite points of view. On the one hand, Thorndike, Bernard, and others have asserted that what McDougall and his followers treat as a single instinct—fear, for example—is simply a label for a number of quite distinct reactions to a number of quite different stimuli or situations; and this school of critics, instead of recognizing only about a dozen main instincts, is accordingly led to enumerate more like fifty or a hundred 'specialized tendencies' as making up 'the original nature of man.' On the other hand, Watson and the behaviourist school, as we have seen, argue that most of the so-called instincts are not really innate, but are learned by each child afresh soon after birth, apart from the most elementary reflexes—those subserving the vital functions and the simple use of the limbs—he and his followers can discover at most only three definite tendencies that might reasonably be called

¹ This, I think, would be conceded by many American psychologists as well as English. Thus, Woodworth points out that McDougall's critics, in their eagerness to show that nearly all human action-patterns are not innate but learned, have left on one side the more essential problem of 'native impulses or primary motives.' "What the instinct of pugnacity requires is not any particular stereotyped performance, but a tendency to resist interference with any energy; if man is so constituted that he does this, using any means at his disposal, then we may speak of a primary motive of pugnacity." This is in keeping with the view expressed above that the term instinct designates, not a specific action, but (to borrow a phrase from Ginsberg) "a central core of impulse," underlying the overt action.

² These impressions are, I believe, corroborated by experimental research: my own earlier experiments are briefly reported in a paper on 'Facial Expression' in *Child Study*, XII, 1919, pp. 1 *et seq.* I found, as Allport did subsequently, that students of psychology could often be led to interpret the expression of the emotions more accurately by a spell of systematic training. Nevertheless, it seems commonly supposed that the experiments of Sherman, Langfeld, and Landis have "justified the conclusion that reading facial expression is mostly a myth." See, however, Woodworth's recent review of the subject, *Experimental Psychology*, 1939, pp. 242-256.

instinctive—fear, rage, and love.¹ Thirdly, there has been an increasing agreement among most psychologists that from the very start the 'brain' or 'personality' functions as a whole. McDougall, it is said, "represents instincts as separate entities, each with an energy of its own"; and he thus reproduces on the conative side all the exploded fallacies committed by 'psychological atomism' and 'faculty psychology' on the cognitive side. "Each individual has but one character"; and it is "the scientific urge to analyse, the logical urge to demarcate" that have mistakenly led psychologists to split up "the unitary nature of an internal entelechy" into a "fixed stock of inflexible traits."²

If we accept this broader standpoint, it follows that in the higher mammals, and most of all in human beings, what are commonly called instincts must be regarded as functional groups of activities rather than as structural groups of nerve-cells, forming quasi-reflex 'centres,' and embedded within the brain in independence of each other, like raisins in pudding. Their alleged independence is anything but complete. Once again, therefore, the fundamental issue appears to be this: What perceptual and conative tendencies go together, and in what degrees? And an instinct becomes primarily a statistical concept, and only secondarily a biological concept. It is essentially a 'group-factor'; and as such demands investigation by factorial methods.

In view of the increasing introduction of the statistical methods into biology, it is curious that the statistical aspect of our present problem has not been previously stressed. Consider some of the stock arguments urged against the theory of instinct in man. The classifications of human instincts, it is argued, disagree amongst themselves. But that is true of every biological classification. The classifications of plants, of animals, of bacteria, of human races, differ widely from text-book to text-book; yet few would advance this as a proof that distinguishable types of species do not exist: and when the variables are continuous and inseparable, classification turns into statistical analysis. Or, again, it is continually objected that in man what are called instinctive actions are not 'predictable,' not 'invariable,' not 'uniform,' not 'stereotyped': hence, it is inferred, such actions cannot be instinctive. But this is the most ancient of fallacies. When we say that an action is 'invariable,' we do not, of course, mean that it is *absolutely* invariable; we merely mean that it is *less* variable than other actions with which we are comparing it. Variability, predictability, and the like are all matters of degree. In reply, therefore, it is sufficient to point out, first, that even in animals what are called instinctive actions are not absolutely 'predictable,' 'invariable,' etc.; and, secondly, that such actions, both in animals and (though, of course, to a less extent) in man, are more predictable, invariable, etc., than those actions which are the results of learning, experience, intelligence, or reason. The issue, accordingly, is not: are these actions predictable or are they not? but, how predictable are they? And this, again, is a question for statistics.

¹ Watson and his followers tell us that they use love "almost in the same sense as the Freudians use the term sex": the infant's responses to stroking, patting, rocking, etc., are described as responses to erogenous stimuli. This is a view which would be profoundly important to the teacher 'to stand *in loco parentis*' would mean to stand *in loco amans*, and that not with some children, but with all. Yet if we believe that human instincts are historically continuous with pre-human, we shall find it extremely difficult to accept Watson's interpretation of the facts. Those docile creatures which permit human beings to stroke them, to hold them, to carry them about, and to tame and train them, are mostly anthropoids and carnivores which in wild life are lifted, carried, licked, and trained by their mothers, and the affection and confidence they would naturally give their mothers they extend to their human foster-parents. Similarly, I hold, the affectionate submissiveness of the tiny child, on which the educator so greatly relies, must be regarded rather as a response to maternal stimulation than as a response to sexual stimulation. As with the carnivores, it tends largely to die down as the adult stage is reached. If, later on, it persists in sexual situations, this is rather because the sexual situation is built up on the maternal situation than because the parent-and-child situation is built up on the sexual. This is but one of the many ways in which a comparison with instinctive activities in animals may serve to correct psychological assumptions about analogous reactions in children.

² W. STURN: *Character and Personality*, III (1935), pp. 273-4. The Gestalt school is often cited as protesting against atomistic interpretations of personality. It is noteworthy, however, that Koffka agrees that "man is provided with a great abundance of instincts," while warning us not to "think of these tendencies in terms of innate connections between neurones, as Thorndike does," nor as implying "a ready-made set of relatively fixed courses of movement" (*The Growth of the Mind*, p. 112).

³ It is, indeed, true of every science, as writers on scientific methodology have repeatedly insisted: "classification is always tentative and provisional" (Jevons); "every classification is a compromise" (Joseph); "science is an endeavour to isolate systems, yet there are no absolute isolates, except perhaps the universe" (Levy); "popular science finds it hard to distinguish aspects of components, without turning the aspects into separable parts or the components into independent entities" (Dugas). The point is perhaps put most vividly in a couple of papers by H. G. Wells on 'The Classificatory Assumption' and 'Scepticism of the Instrument,' reprinted in *First and Last Things* (pp. 10-18).

(c) *Statistical.*—Those who have insisted that the behaviour of the infant during the first two or three years of life consist of diffuse, chaotic reactions involving the body or the personality as a whole, tend by their emphasis to obscure the equally important fact that, after all, the activity even of the tiniest infant is not *entirely* chaotic, unco-ordinated, or indiscriminate. However general and undirected they may look at first glance, his squirmings and writhings are quite different from the generalized convulsions that would ensue from completely unco-ordinated motor discharges. Nor are the movements altogether random. They appear random only by contrast with the skilled actions of the adult, or with the stereotyped chain of movements typical of instinctive behaviour in the lower animals. Even when he seems to be simply wriggling, his hand is more likely to move to his mouth than to any other part; his thumb more frequently approaches his first finger than any of the other three; his vocal organs give vent to certain melodic patterns and to certain articulate syllables more often than others. Some movements are thus more *probable*, and to that extent can be *predicted*. So with the stimuli. Some objects are more likely to arrest attention, others are less likely: and, though the possible responses are exceedingly numerous, certain responses are more likely to follow certain stimuli than others. If, therefore, we ask in each case 'which?' the answer must be expressed in terms of probability, that is, as a statistical conclusion. But the practical psychologist is not merely concerned with generalized probabilities that apply to the entire human race. He also wants to predict the probable reactions of this or that individual. And this leads to more specific statistical inquiries.

(1) *Instincts as Conative Group-Factors.*—From this statistical standpoint we may easily meet the two main criticisms. First of all, we may state the issue raised by Thorndike's criticism in the following way. Take a particular instance: the behaviour that we loosely describe as fear consists in reacting to a number of different stimuli or situations (loud noises, large animals, small creeping animals, high, dark, lonely or shut-in places, sudden and unexpected stimulations of almost any kind) by a number of different responses (running away, hiding, keeping perfectly still, crying out in a particular way, producing a particular expression on the face, trembling, sweating, turning pale, and so on). Now, if fear is to be regarded as a single semi-independent 'tendency' or 'factor,' we ought to find that all children who displayed excessive timidity in any one of these situations (say, the occurrence of a loud noise) should tend (though not necessarily to the same degree) to display excessive timidity in all the other situations; and similarly that those who revealed excessive timidity by one kind of reaction (say, by running away, if out in the open, or by crying out, if a parent is near) should also tend to betray it by alternative kinds of reaction in other situations (e.g., by hiding under the bed-clothes, if in bed, or by remaining mute, if only strangers are near). Again, if anger forms another semi-independent factor, then the various angry reactions should form a second discernible group, showing specific correlations amongst themselves, but low or even negative correlations with the reactions of timidity. In this way we can test Thorndike's statement that there are 'six or more specialized pugnacities,' and quite as many 'specific fears'; and we can reconcile it with McDougall's theory that pugnacity is one instinct, while fear rests on another, and both theories with the view, so strongly urged by Allport and others, that personality is a consistent whole, and so succinctly summed up by Stern in his favourite phrase, "*character is a *unitas multiplex*.*"

Elsewhere¹ I have described investigations intended to procure answers to these questions. Here I need do no more than recapitulate the tentative conclusions so far attained.

The first and the most obvious is that all emotional tendencies prove to be positively correlated: we have, therefore, to recognize an all-embracing factor of general emotionality. When we have eliminated this general factor, we are still confronted with two or more broad temperamental factors, each covering a large field of behaviour: of these the most conspicuous is a factor apparently sorting nearly all emotional reactions into two main sub-divisions—an

¹ 'The Factorial Analysis of Emotional Traits.'—*Character and Personality*, VII, pp. 238-54, 285-98.

aggressive or sthenic and an inhibitive or asthenic, a further factor is discernible, cross-classifying them into another pair of sub-divisions, namely, those chiefly attended by pleasure and by unpleasure respectively. The discovery of these more comprehensive factors, therefore, lends considerable support to those who maintain that personality forms a more or less integrated and consistent whole.

But, when these 'common factors' have been ruled out, a large number of more specific correlations become apparent. By their arrangement they suggest that the numerous stimuli and the still more numerous reactions may be sorted into about a dozen or so loosely demarcated, partly overlapping clusters. These clusters in their turn correspond fairly closely with the several instincts that appear in the lists compiled by earlier writers.

(2) *Cognitive Group-Factors as Innate*.—But before we can finally identify this residuary set of 'group-factors' with what we have learnt to call instincts, we must further prove that each is in some sense hereditary. Again, this is a problem for statistics. What we now seek to correlate are the factorial tendencies of individual children with the factorial tendencies of their relatives. Of course, if a bad-tempered child has bad-tempered parents, we cannot forthwith infer that the temper has been handed down by direct biological inheritance; merely to live with a bad-tempered parent is enough to make a child bad-tempered. Or if an illegitimate girl has been repeatedly warned not to follow in her mother's footsteps, there is no need to attribute her subsequent delinquencies to the inheritance of an excessive sex instinct. The most convincing correlations, therefore, will be those discovered between members of the same family who have seen and heard little or nothing of each other.

Here, once again, so far as it is obtainable, the evidence is positive. Time after time, when a young girl has been found to be committing repeated sex-delinquencies, it is learnt that relatives in her family whom she has never met, and, it may be, never even heard of, have been characterized by a similar over-sexed constitution. Much the same coincidences are discernible in the case of other tendencies associated with the traditional list of instincts—migratory tendencies, pugnacious tendencies, tendencies to depression, anxiety, assertiveness, submissiveness, and the like. To establish all this, we do not need to invoke any mystical principle called 'heredity,' or even to picture the physiological mechanism by which 'transmission' takes place, though, of course, our inferences must be consistent with what little is known of inheritance in man. As I have said elsewhere, in discussing the use of the term in practical psychology, "by hereditary all that the psychologist means is that it is possible to infer from the behaviour of a child's relatives what will probably be his own behaviour, even though the training or environmental influences to which he or his family have been subjected have been altered or removed."¹ In diagnosing individual character, the position of the psychologist is analogous to that of an insurance society's doctor diagnosing an individual's suscep-

¹ *The Backward Child*, p. 541. When we know a little more about heredity in man, our theory of instincts may become of practical importance in another direction, namely, in the field of human eugenics. Even now, the social psychologist may permissibly speculate on the effects of selective breeding in strengthening or weakening the instinctive tendencies among different races or among different social classes, provided he takes care that his speculations are not so ill-founded as to discredit the very concepts he is exploiting.

May I seize this opportunity to answer a more personal criticism? Dr Vernon writes "My chief doubt about your views as expressed in *The Young Delinquent* and *The Subnormal Mind* is the implication that instinctive tendencies are causative factors *about which nothing can be done*." This seems in some ways analogous to the objection urged by Dr Hill and others against my view of intelligence as an innate cognitive factor. If the amount of intelligence which a child inherits at birth is limited from the outset, does not that stultify all endeavours of the educator? Both criticisms appear to ignore the fact that innate instincts and innate intelligences are defined as *factors*, that is, one set of components, but not the only set of components, in the child's mental development. Just as we find it convenient to describe the motion of the wind in terms of two orthogonal axes, so it is helpful (in making certain predictions, for example) to express individual behaviour in terms of two independent components—what is learned and what is unlearned or innate. The innate factor is unalterable by learning, because by its very definition it is independent of the influence of learning. As such it is, of course, a mere abstraction. There is no suggestion that the concrete resultant, namely, the child's actual conduct (or, if the reader prefers, his growing personality) cannot be changed by training. If I give a child a high assessment for sex on some arbitrary scale, that does not mean that I predict *certain* sex-delinquency irrespective of all educational efforts; I merely imply that such actions have a specifiable degree of probability, so far as data about her innate constitution go. If I fire a shell due north, that does not prevent the breeze from deflecting it towards the west or the east; and if the breeze deflects it, that does not prove that I did not fire it due north. Or, to revert to the comparison given in the text, when my doctor reports to the insurance society that I 'inherit' a tubercular 'diathesis' from my grandparents he does not allege that I must of a certainty succumb to tubercular disease; he merely records a tendency.

tibility to particular types of disease: he studies the individual's 'family history' and 'constitution' simply as one set of data enabling him (on the basis of known statistical results) to make generalized predictions.

So far as it can be accepted, this second line of statistical evidence enables us to face the criticisms of Watson and his school. And thus we see that the study of instinct essentially involves a double factorial analysis: the study of factors underlying correlations in the same individual and the study of factors underlying correlations between different individuals of the same family or species. The interesting thing is that the two sets of factors so largely coincide.

(3) *Conative Group-Factors as Measurable*—Finally, a factorial technique will enable us to specify, by means of a single figure, the relative strength of each complex tendency. By 'correlating traits' we can compare different individuals in regard to the same motive; by 'correlating persons' we can compare different motives in the same individual (or in the same group—whether race, sex, or temperamental type), and thus express (so far as the traits envisaged are concerned) the configuration or Gestalt of each personality regarded as a synthetic whole.¹

It appears then that, in principle if not as yet in fact, the statistical approach can supply us with adequate answers to all three problems set out above. The endeavour to classify the conative tendencies of man is by no means new. It has occupied psychological thinkers from the Stoics to the psychoanalysts. Spinoza's attempt to apply the 'geometrical method' to deduce an 'ethical dynamics' is indeed a kind of factor-analysis on an *a priori* basis. The conclusions to which such speculations have led seem to be partly verified, and largely reconciled, by the results of the approach here suggested. What is novel in it is the reliance (i) on quantitative covariations, instead of on qualitative similarities, for the principles of classification, and (ii) on empirical data, collected *ad hoc* in quantitative form, instead of on the analysis of popular names and notions.²

V.—SUMMARY AND CONCLUSIONS.

My main conclusion, therefore, is this. In upholding the notion that instincts are the foundations of human character, all that we need to agree upon are the two following propositions. First, if I have observed one or more instances of a given type of reaction on one or more occasions (e.g., an exhibition of shyness or temper at an interview), then I

¹ One of my critics objects that tendencies, which are by hypothesis innate in every member of the species, will not account for differences between different members of the same species. "Instincts in lower animals appear to be of the former type only: they presumably do not make one bird or wasp more active or more accurate than another in nest-building." With this I cannot agree. The observant naturalist assures us that, even among ants, remarkable differences in the strength of the same instinct are discernible in different individuals. Nor do I see why differences between human individuals should be placed in a separate category. Surely every biologist believes that variations in an innate tendency may themselves be innate. In educational and clinical work this principle, as enunciated in paragraph (3) above, has already demonstrated its practical value. Indeed, in dealing with the young, the neurotic, the mentally or morally subnormal, it is hard to see how we could get along without some such schedule of fundamental tendencies, common to all.

I do not, of course, pretend that stating the strength of a dozen instincts or so is of itself enough to cover the entire personality. That in any case could never be completely summed up by a bare table of quantitative specifications. For vocational guidance (for instance) and for biographical purposes even in the young (and *a fortiori* in the adult), we need in addition a working classification of attitudes, interests, sentiments and traits, which may be acquired, or developed as a result of the interaction of innate tendencies with the cultural and social environment.

² A teacher who has read this section protests that I "seem to have deserted educational psychology for the higher mathematics." It is a common complaint from those who feel confused by anything short of wholesale generalizations. The assumption appears to be that, because a psychologist proposes to supplement the results of qualitative observation (including introspection) by a quantitative statement of correlations and probabilities, he must therefore reject everything that cannot be reduced to a figure. Accordingly, let me emphasize that, unlike the behaviourist, I do not maintain that a preference for exact and objective methods compels us to neglect all other methods of inquiry. My aim is to make qualitative statements with quantitative accuracy. And I feel sure that the teacher who voices this protest would not complain that her butcher was "deserting salesmanship for the higher mathematics" because he calculated the cost of a joint of beef in accordance with the correlation between weight and price, instead of trusting to his eye and making her a 'reasonable offer.' So in psychology we gain, we do not lose, by casting our statements in numerical form. The popular mode of argument is of the following type (I quote almost verbatim from a recent educational conference). (i) "A holds that juvenile crime is due to heredity; B holds it is due not to heredity, but to environment; the truth is that it is due sometimes to one, and sometimes to the other"; or again: (ii) "Jane started sexual

can infer, with varying degrees of probability, certain other reactions on future occasions—reactions of the same type with high probability, reactions of more or less different types with lower probabilities. The assignment of each reaction to its type will be a matter for empirical determination, and must be settled, not by noting resemblances, but by calculating correlations: the amount of correlation will indicate the probability. Secondly, if instances of a given type of reaction are reported with unusual frequency in the child's family history, or if they have been observed in the child himself at an age so early that his own personal experience can have had comparatively little influence, then I can infer, with varying degrees of probability, that these same reactions (and, in virtue of the previous proposition, other reactions belonging to the same type¹) will be liable to recur all through the child's life, and indeed (though, of course, with diminishing probability) even when the child is grown up. In these two respects—but naturally with far less certainty owing to its richer complications—human behaviour is predictable much as animal behaviour is predictable. And since the word 'instinctive' has been almost universally employed to describe these forms of predictable behaviour in animals, it seems convenient to retain the same word for the analogous facts as observed among human beings. No doubt we have to correct the popular and the earlier scientific notions of instinct in many minor details, but these corrections are not so sweeping as to compel us to discard altogether so useful and so suggestive a term.

As we have already seen, the plain man and the popular expositor like to visualize these abstract statistical predictabilities in the shape of concrete material causes. They picture intelligence as essentially issuing from some physical characteristic of the architecture or the nervous energy of the brain, and special intellectual abilities as due to peculiar structural characteristics in localized brain areas. And in much the same way they seek to picture the classification of emotional tendencies as the effect of separate anatomical mechanisms postulated for each class—specific neural structures handed down by heredity. Nor are such speculations entirely unreasonable from a theoretical standpoint: they supply the *a priori* probabilities which it is the business of experiment and statistics empirically to confirm. From a practical standpoint, however, they raise extraneous issues which require evidence not at the moment in our possession—issues, too, which are not directly relevant to the educator's problems.

misbehaviour while she was still at school; she is bound to end up on the streets." We get rid of much vagueness and much error if we substitute a scientific statement of the following type: (i) "In a study of 200 children, aged 12 to 15, I found hereditary conditions apparently operating as major factors in 29 per cent, and having negligible or minor importance in the remaining 71 per cent"; or again (ii) "Of sixty-one girls (from Jane's area) who were known to have had sex-experiences before leaving school at the age of fourteen, and whose after-histories have been followed up until the age of twenty-five or later, eight took to prostitution, and the rest did not. The chances that Jane will become a prostitute have therefore risen from about one in several thousand to about one in eight." The reader will observe that, in all such cases, *the statistical formulation need omit nothing of value that the non-statistical can include*.

¹ I use the term 'type' in much the same sense as it has in Whewell's doctrine of classification by type; and I hold that the objections to that doctrine, brought forward by Jevons and other logicians, have been overcome by the statistical formulation supplied by factor-analysis. Unfortunately, this is usually obscured by the way such analyses are commonly explained: psychologists still tell the beginner that correlations measure 'similarity' or 'resemblance'; and this suggests that correlated activities must possess a similarity which can be discerned by mere inspection. And so we are back at the naive level once again: it is as though the geologist assigned rocks to the same strata, simply because they look alike, without troubling to discover whether they are actually found together. The two main fear-reactions, for example (running away and keeping still), like the two main anger-reactions (attacking and sulking), do not resemble each other; but they are highly correlated. If we argue by the naive logic of resemblances, we shall assign the members of such pairs to different instincts; if we argue from ascertained linkages, to the same.

We can therefore reduce our definition of instincts to this simple if somewhat clumsy formula : instincts are *innate, conative group-factors*. They are group-factors, not general factors, because, unlike general emotionality or general intelligence, they do not enter into every action ; they are conative factors, not cognitive factors, because they are concerned with ends rather than with means, and with the amount of energy released for those ends rather than with its perceptual or conceptual guidance ; finally, they may be termed innate, and not acquired, because they represent components existing prior to all learning, or (to speak more strictly) components thought of as independent of what the individual has learnt or will learn.

The notion of an abstract factor or component seems precisely what is required by any tenable doctrine of instincts in the present stage of our knowledge. It enables us to discuss certain characteristics of an individual's behaviour without forgetting that the individual himself is but one factor, or group of factors, in the total situation, and it enables us to compare the strength of such characteristics in quantitative terms. It enables us to distinguish learned and unlearned components in each of his actions, without requiring to divide the actions themselves into 'learned responses' on the one hand and 'unlearned responses' on the other. It expresses the fact that the relations between the various stimuli, on the one hand, and the reactions, on the other, are extremely loose and variable—matters of probable prediction, not of mechanical certainty. At the same time, it expresses the fact that, as thus inter-related, stimuli and reactions form complex patterns, showing a number of nuclear clusters. Within these limits it leaves us a certain amount of freedom to construct our inventories, and to re-arrange them for different purposes, on a pragmatic basis ; so that we may side with the 'slumpers' or with the 'splitters' as occasion seems to require, adopting a broader classification, like McDougall's, for some purposes, or a finer classification, like Thorndike's, for others, and in clinical work, where detailed investigations may be out of the question, even content ourselves with a general determination of the individual's temperamental type—classifying him as more or less unstable, more or less introverted, and so on. Thus, from the practical standpoint, the analysis of behaviour into factors furnishes the applied psychologist with an elastic working schedule for the description, and (if necessary) the quantitative specification, of individual personalities, and yet permits the theoretical psychologist to speculate unhampered on the underlying physiological or biological mechanisms : even if further physiological and biological research disproves the existence of such neural mechanisms (or, as I should venture to guess, shows that such an explanation, without being wholly erroneous, involves a gross over-simplification of the facts) that will not destroy the powers of prediction which the discovery of these factors confers. Finally, if anyone thinks that my own classification of innate motives is incorrect, it is open to him to re-investigate the correlations, and so substitute a better list of group-factors, or (it may be) demonstrate that no such group-factors exist ; or if, admitting the existence of group-factors, he believes that innate or hereditary components have less influence than I should assign them, then again it becomes his task to re-investigate the correlations with more carefully collected data, and prove that the correlations are lower than I have assumed. Interpreted along these lines, the doctrine of human instincts may, I think, not only escape the criticisms levelled against it in its narrower form, but also make a vital and much-needed contribution to the theory and practice of education.

A STUDY OF THE EFFECTS OF EVACUATION AND AIR RAIDS ON CHILDREN OF PRE-SCHOOL AGE.

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- I.—*Problem and methods.*
- II.—*Results.*
- III.—*Summary.*
- IV.—*Note on statistical procedure.*
- V.—*References.*

I.—PROBLEM AND METHODS.

The primary object of the following investigation was to study the effects of evacuation on children of pre-school age, along lines similar to those already adopted in studying older children in the same reception area (a Welsh seaside resort and its immediate neighbourhood). Among the group selected for observation it was found that nearly 90 per cent had experienced severe air raids just before evacuation. Accordingly, an attempt was made at the same time to determine how far the after-effects of these experiences were still noticeable in the children after they had settled down in their new quarters.

The problem and general methods were suggested by Professor Burt. Both to him and to other members of the Psychological Department I am indebted for help in planning the research, in devising an appropriate statistical procedure, and in examining the conclusions to be drawn. I have also to express my gratitude to the billeting officer, Mr. Osborne Evans, for his willingness to grant facilities and to discuss my problem at various stages, and to Dr. E. Jones, Chief Medical Officer of Schools, and to Dr. Bevan and the staff of the medical clinic for their interest and co-operation.

The investigation itself must be regarded as little more than a first tentative study, designed more with a view of testing the adequacy of the methods proposed than of reaching immediate or conclusive results. For this preliminary survey, therefore, only 100 children were selected : forty-eight boys and fifty-two girls. Their ages ranged from six months to four years eleven months. Unlike the children of school age studied in previous surveys made by the department, every child in this particular group had been brought to the reception area by its own mother, and was still living with her. In other areas other research students have commenced the study of unaccompanied children of pre-school age—a more exceptional type of case. Some of their preliminary conclusions will be noted below ; but a full and systematic inquiry into this further problem is urgently needed.¹

The observations reported in the following paper were carried out between December, 1940, and April, 1941. The requisite data were obtained from three main sources : (1) the billeting officer and his assistants, (2) the mother and in some cases the householder with whom the children were billeted ; (3) an intensive study of each individual child, carried out personally in every case. This information was supplemented in minor ways, more particularly by incidental facts communicated by the medical officer and the visiting nurses. To ensure

¹ In nearly all the psychological surveys of evacuation hitherto published, the numbers have been small. Burt's first inquiry, planned just before the outbreak of war, covered only 157 cases investigated from a psychological standpoint (Ref. 1), although figures for social conditions (obtained by questionnaires) are now available for nearly a thousand (Ref. 4). Slade and Davidson made an intensive study of a sample of 100 older children (Ref. 3). In the report of the Cambridge Survey, published since the foregoing was written, the number of cases 'personally interviewed and tested by a psychologist' included only eighty ; but again for social conditions far larger numbers were available (656). Both groups, however, included children of school age only (Ref. 5).

that the same ground was covered systematically and uniformly in each instance a routine schedule of questions was prepared beforehand, and a copy was filled in for every child, so far as possible in quantitative terms. The questionnaire itself was based primarily on Burt's schedule for investigating problem children.¹ This had already been somewhat extended and modified by previous investigators in the department during studies of older evacuees; but further changes were found requisite to meet the special problems arising with children under school age. In revising the schedule for the present purpose I have been much indebted to Professor Burt and Miss Constance Simmins, formerly Psychologist at the Tavistock Clinic, whose experience with psychological studies of younger children was invaluable at every stage of my inquiry. We believe that, as it now stands, the questionnaire will be found useful as a starting-point for subsequent and perhaps more extensive inquiries.²

In addition to these more general observations, the intelligence of every child was tested with Burt's revision of the Terman-Merrill extension of the Binet tests. Like his revision of the earlier Stanford scale, this includes tests, or rather developmental criteria, for children under the age of three, based on Gesell's studies of young children.³ For reasons that it is unnecessary to discuss here, one or two changes have been made in the Gesell norms as recommended in this publication.

II.—RESULTS.

In many ways the unusual conditions of the war have provided a kind of unplanned experiment on the influence of certain changes on the early development of young children. Indeed, the sidelights gained upon developmental problems during these earlier years were perhaps the most valuable part of my investigation. Here, however, I shall not attempt to enlarge on the impressions gained, partly from limitations of space, and partly because, until they have been more fully confirmed, the inferences themselves must remain somewhat speculative. The reader who is interested in the wider issues may refer for details to the descriptive section of my thesis,

Frequency of maladjustment.—As a result of the observations just described each child was first graded according to the apparent degree of success with which he had adjusted himself to his new surroundings. To begin with, a five-fold grading was used. The assessment was based on the physical, nervous and mental condition of the child, and particularly on changes in his condition, first after removal from his home district to the reception area, and, secondly, after he had been in the reception area for a period of at least two months. Eventually, however, it proved possible to divide the children into two main classes: those who were, and those who were not, satisfactorily adjusted at the time of the final interviews.⁴

¹ The fullest printed version is given in *The Backward Child*, pp. 630-3; cf. *The Young Delinquent*, pp. 23-5. Many useful points were also suggested by Professor Valentine's "Report Form" (*this Journal*, X, 1940, pp. 35-48).

² The schedule will be found set out in full in my thesis on *A Study of Evacuees of Pre-School Age* (University of London Library). In an early note (Ref. 2) the editor of this *Journal* drew attention to the need for gathering data in regard to evacuated children along comparable lines; and it is a pity that, in spite of this appeal, there has been so little consultation among psychologists who have planned the various inquiries. The Cambridge Investigators, for instance, make no reference whatever to other surveys, and in assessing the temperamental characteristics of the children adopt a six-fold scheme of psychiatric types apparently improvised *ad hoc* by a medical colleague.

³ See BURT: *The Subnormal Mind*, Appendix II, and GESELL: *Mental Growth of the Pre-School Child*.

⁴ The points noted are summarized in the paragraph below on 'symptoms of maladjustment,' and are more fully enumerated in the questionnaire appended to my thesis. The criterion was: has the child's condition shown a change for the worse, definite and persistent enough (though possibly slight) to be attributable to evacuation? Doubtful cases were discussed with other members of the department, who had assisted in the investigation of older evacuees by Slade and Davidson. Hence it may be assumed that the line of division has been approximately the same for the children of school and of pre-school age.

Among the 100 children selected for intensive study fifty-six settled down satisfactorily and forty-four did not. Thus the number of satisfactory cases somewhat exceeds the number of unsatisfactory ; yet, in the light of the proportions found by earlier workers, the amount of maladjustment seems decidedly high. With older children one of the most remarkable facts emerging from the investigations hitherto made is that the amount of maladjustment proves to be far smaller than had been anticipated on the outbreak of war. In a research carried out under Professor Burt in the same reception area with the same methods the number of maladjusted cases found among children aged eleven to fourteen was only 17 per cent.¹ Much the same figures emerge from his inquiries in other areas either personally or by questionnaire ; they range between 15 and 25 per cent.² At Cambridge, Straker and Thouless report a figure of only 8 per cent.³ At first sight these relatively low proportions seem flatly inconsistent with the present results

Causes of maladjustment.—In explanation it might perhaps be suggested that the child of tenderer years is, by very nature, likely to be more sensitive to radical changes in its home environment. However, a closer study of the individual cases in my group appears to dispose of this suggestion, at any rate as a general principle. In the majority of the unsatisfactory cases, it proved to be, not so much the nature of the small child himself, as the nature of the new homes provided for these smaller children, which appeared mainly responsible. Nor, indeed, as I shall show in a moment, was it the tiniest children of all who chiefly suffered, but rather those who were nearer school age.

This result is of some practical importance. In popular discussions on the advisability of evacuating younger children, the point which has been continually stressed is that the mother should always accompany children of pre-school age ; when this is impossible, then, it is argued, the child should be left where he is, to face the shocks and dangers of air raids, rather than incur the greater shock of being deprived of his own mother's care. The younger the child the more likely he is to suffer (so at least it is assumed) severely and permanently by removal from his mother. The arguments are plausible enough. Yet there is little or no direct empirical evidence one way or the other. What, however, here seems clearly demonstrated is the importance of the conditions of life to which the child is removed. Unquestionably, the child needs maternal care. And unquestionably, on many different grounds, it is desirable that this care should, if possible, be bestowed by the child's own mother. Yet there seems no convincing psychological evidence that the emotional development of the child is bound to be injuriously affected when this care is bestowed by someone else. On the contrary, experience both before and during the war has shown that, although subsequent breakdowns are somewhat commoner among those who have been removed from their own mothers at an early age, and especially among those removed to institutions rather than to families where they might receive personal interest and affection, nevertheless, such breakdowns are by no means an inevitable effect. And plenty of instances have been reported where a child placed during babyhood in the charge of a good foster-mother has done well, and has even cried and had a little breakdown on returning to its own mother. It should be emphasized that the psychological conditions of the new home are as important as the physical. It is not sufficient for the material well-being of the child to be properly attended to : he must, even at these early years, enjoy what is loosely called a 'sense of security' ; and this means affection and sympathy as well as proper food, warmth, fresh air, and hygienic conditions generally. To billet tiny children singly with foster-mothers, who would in most instances probably have no special qualifications for the task, would obviously be unwise as a general principle. The ideal plan would be to organize little 'families' of six or a dozen youngsters to be placed under the care of properly trained persons in some suitably equipped house in a quiet rural district. In many cases children already

¹ Cf. this *Journal*, X, p. 187.

² Cf. this *Journal*, X, p. 9.

³ Cf. this *Journal*, X, p. 99.

attending a nursery school or a nursery class in the evacuation area might be moved as a single unit.¹

In considering the present problem it is essential to bear in mind the conditions under which the children were evacuated. In the case of those accompanied by their mothers there is no fully-developed official scheme. On arriving at the reception area the mothers register at the billeting office, and thus become entitled to the Government allowances. But for the most part it is, in the majority of areas, left to the mothers themselves to undertake their detailed billeting arrangements. They may receive addresses from the local office; but the final negotiations are made directly between the mother and the householder with whom she proposes to lodge. It naturally follows that, in many areas at any rate, the conditions of evacuation in these cases are almost bound to be less satisfactory both for the mother and for the child. Unless carefully selected beforehand, householders are much less willing to put up with the very obvious inconveniences entailed by the presence of tiny infants than to receive unaccompanied children of older and more independent years. There are, as we can testify from first-hand experience, many who are actually more interested in, and more sympathetic towards, infants than towards older boys and girls of more independent ways: yet on the whole such persons seem to be relatively exceptional, and need to be definitely ascertained.

If systematically studied and met, however, the special difficulties of the situation are by no means irremediable. It is impossible here to examine them in detail, and no doubt from one area to another they vary considerably. In my thesis I have attempted to describe them more fully, and to put forward some tentative practical suggestions that appear to emerge from the observations made.

Symptoms of maladjustment.—The lack of adjustment showed itself in many different ways, and nearly always in more ways than one in each single child. An increase in the frequency of crying was the most conspicuous indication. A more general and a more sustained unhappiness, dating from the day of removal, was perhaps the most typical. Often this expressed itself quite as much by irritability, perverseness, and temper as by tears or screaming. In the older children a common symptom was a continual restlessness and a constant series of querulous questions or complaints. Many would ask for their father, their brother or sister, their pet kitten or their favourite toys. At all ages there was frequently an increased timidity and excessive liability to childish fears. Definite nervous symptoms were reported in most of these cases, especially disturbances of appetite or of sleep (insomnia, dreaming, nightmares, talking or grinding teeth during sleep). With children in their second year a setback in learning to walk and talk was frequently mentioned by the mothers. Incontinence, or a reversion to incontinent habits, was reported in a few cases; and an increase in, or recrudescence of thumb-sucking, in quite a number. In several, particularly where the child's appetite or sleep had suffered, the mother reported a minor or temporary disturbance of physical health: but there was no tangible evidence that any child's health had suffered seriously or permanently as a result of the evacuation.

Of all the various symptoms perhaps the most frequent and the most suggestive was an excessive dependence on the mother. But this was by no means confined to, or even specially characteristic of, the maladjusted cases. To judge by the mother's own reports, it would seem that there was an excessive dependence on the mother before evacuation in 21 per cent of the cases, but that the proportion had risen to 44 per cent after evacuation. Often, but by no means invariably, this change seemed the natural consequence of an increased sense of uncertainty or insecurity, resulting largely from the failure of the little

¹ A planned evacuation scheme has been put forward by the National Council for Maternity and Child Welfare, and still more recently an experiment with a small nursery unit has been started with ten children from badly bombed districts in the East End of London who have been removed to Wytham Abbey—an experiment originally suggested in an article in the *Times Educational Supplement* dealing with the evacuation of children under five who cannot be accompanied by their mothers and who are not eligible for panel evacuation to residential nurseries.

daily habits already built up in the child's own home. In many it was simply an inevitable by-product of the restrictions imposed in the new home-quarters.

Conditions specially related to maladjustment.—In attempting to discover what conditions, either in the child himself or in the billet to which he has been taken, are most closely connected with satisfactory or unsatisfactory adjustment, it is desirable, wherever possible, to apply some definite statistical criterion. As we have seen, from the standpoint of adjustment, the children can be placed in two main categories, according as their adjustment was satisfactory or not; similarly, each condition can be dealt with under two alternative categories, according as it was present or absent. With this 2×2 -fold classification, the best measure of the relative importance of each condition is provided by a normal tetrachoric correlation.¹ The significance of the correlation can be tested by calculating the square contingency ('chi squared'). More elaborate statistical analyses were also attempted; but appear to add nothing to the information gained by this comparatively simple procedure. Not all the relevant conditions can be dealt with in this quantitative way. Here I shall confine myself chiefly to those simpler and more specific points that have been discussed by previous investigators in their studies of older children: these are, as it happens, the points that lend themselves most easily to formal statistical proof.

The correlations between satisfactoriness of adjustment and the chief conditions observed are summarized in Table I. For the most part the figures explain themselves; but a word or two of comment may be desirable. In the children themselves the factors noted by most investigators would seem to be temperamental stability, age, sex, and intelligence.

Age.—As remarked above, there is some evidence that the children over two years of age adapt themselves less satisfactorily than the younger infants. This, after all, is intelligible, since the older children are naturally more acutely aware of the changes. Owing to the com-

¹ As has been pointed out elsewhere (*The Backward Child*, pp. 671-3), with the 2×2 frequency-tables that so constantly arise in surveys like the present, there are three coefficients which are of practical service for estimating the amount of correlation: (i) the point-distribution coefficient ϕ , which is simply the usual product-moment formula applied to discrete and ungraded data; (ii) Yule's coefficient of colligation, w , which is simply ϕ calculated for a table with equalized sub-totals; (iii) the so-called tetrachoric correlation, r_t , which is based on the assumption that each variable is in fact normally distributed. (Since with a four-fold table all three are 'tetrachoric,' it would be better to distinguish the last as the 'normal' tetrachoric correlation.) These three coefficients are briefly described and illustrated in the note on statistical procedure at the end of this paper. The first two are appropriate only to data which fall into two sharply separated classes. Burt, in his earlier studies of evacuation, concluded that adjustment was essentially a matter of degree, and that extreme cases of both maladjustment and of admirable adjustment were both comparatively rare. Similarly, most of the environmental conditions to be correlated with adjustment would seem to be, at any rate from a subjective point of view, continuously graded variables with the hump of highest frequency near the centre. Superficially, no doubt, it might be argued that a child either has or has not changed his billet, been accompanied by his mother, or again by his own brothers and sisters; and this imposes a two-category form on the data as ascertained. But, viewing the differences from the standpoint of the child, the reaction set up by the presence or absence of relatives is a graded reaction, not an all-or-none reaction; a second child, for example, though billeted with the younger evacuee, may, nevertheless, actually have little or no effective contact with him. Slade and Davidson, on the other hand, appear to reject these considerations, and argue in favour of calculating a simple point-distribution coefficient (ϕ) instead of the normal or tetrachoric correlation (r_t). It is true that this is not the sole reason they give for this procedure, the chief being the greater ease with which ϕ can be calculated. In my own work I found the twofold classifications by no means so clear-cut as Slade and Davidson. Moreover, when the correlations are large, their statement that there is little difference between the two coefficients no longer holds. Accordingly, in my thesis, I have calculated both coefficients for every table. But, in the main, it would seem, the normal coefficient best represents the amount of correlation, especially to those readers who are more familiar with the scale of figures obtained by the full product-moment procedure in its ordinary applications.

paratively small number in the group, the correlation is barely significant; the odds, however, are more than ten to one against the difference being explicable by chance.

Sex.—The proportion of ill-adjusted cases is slightly greater among the boys. But the correlation is but little above zero; and, if sex has any influence at all, it must unquestionably be extremely small.

Intelligence.—The proportion of satisfactory cases is more than twice as great among the children who were below average intelligence as among those who were above average intelligence. This, again, is not difficult to understand. It was in the main the brighter children who were quickest to notice and to feel the change as a whole, and to become distressed by the loss of their usual toys and of the freedom and independence they had enjoyed at home.

Temperament.—There were more than twice as many satisfactory adjustments among the stable children as among the more unstable. Indeed, temperamental stability would seem to be the most important of the personal factors—i.e., conditions within the child himself. This conclusion becomes all the more plausible when we remember that, particularly with children of this age, it is far from easy to obtain trustworthy estimates of temperamental stability—much less easy, for example, than to obtain estimates of general intelligence. And the errors of assessment must therefore have diminished the apparent correlation to a far greater degree.

Presence of Other Children.—I now turn to conditions of billeting. In fifteen cases there were no other children whatever, whether related or unrelated, in the billet. The majority of these cases showed unsatisfactory adjustment; but the differences are too slender to be fully significant. At the same time, there was some small evidence suggesting that the children adapt themselves better to their new surroundings when their younger relatives (usually their own brothers or sisters) are billeted with them: even here, however, the correlation was not fully significant. Apart from one or two cases where an older sister partly took over the role of mother, it was, in fact, the children over two rather than the tinier infants who responded most to the presence of their younger relatives. In certain individual cases the presence of children not related to the child himself (sons and daughters of the householder, for example) seemed to be beneficial when there were no younger relatives: but in general this factor appeared to make little or no difference at this age.

Changes of Billet.—An exceptionally high correlation was observed between maladjustment and changes of billet. Such a correlation, of course, does not necessarily imply that the changes themselves were the cause of the maladjustment. On the contrary, in a few cases the temperament of the child was largely responsible for the change. But in most cases a closer study indicated that the unsatisfactory character of the billet was the chief underlying cause both of the maladjustment of the child and of the changes subsequently made. To attempt a more specific study of the conditions in the billet by statistical methods would be impossible without extending the research to a greater variety of cases. For the provisional inferences gained from watching individual cases I must once more refer the reader to my thesis.

TABLE I.—TETRACHORIC CORRELATION BETWEEN THE CONDITIONS SPECIFIED AND SATISFACTORY ADJUSTMENT.

Conditions.	Correlation.
Age	- .27
Sex .....	.08
Intelligence	- .25
Temperamental Stability .....	.31
Presence of Brothers and Sisters in the Billet .....	.15
Presence of Unrelated Children in the Billet .....	.02
Absence of Children, Related or Unrelated	- .23
Changes of Billet	- .38
Experience of Air Raids	- .18
Marked Fear during Air Raids	- .91

Air raids.—Among the children who had experienced air raids the numbers of satisfactory and unsatisfactory cases were about equal. Among those who had not experienced air raids, the number of satisfactory cases was about twice as large as the unsatisfactory.

But the actual correlation falls below the conventional borderline for statistical significance.

What is, however, unquestionably significant is the high correlation between mal-adjustment and the amount of fear that the child had apparently suffered during the raids. Obviously, the mere fact that the child's own home district had been raided while the child was there is not of itself likely to be closely connected with subsequent mal-adjustment. Nor is the severity, proximity, or duration of the raids a necessary factor. These points are fully confirmed by the correlations. It is rather, as after all we might naturally expect, the degree of emotional disturbance that the child has evinced at the time which is most likely to portend more serious and more lasting mental disturbances. In addition, it was frequently the more unstable children (those, for example, who had a history of minor nervous symptoms before the air raids) that were most affected both by the raids and by the removal to strange quarters.

A high correlation (.59) was also found between the fear evinced by the child and the fear experienced by the mother. On these two points the primary source of information was in most cases the mother herself; and it might be argued that a mother who admitted considerable personal fear might also magnify the fear shown by her child. We do not, however, believe that this is a serious source of error; and in some cases we were able to check the facts from independent evidence.

Even after an interval of six months the effects of the air raids still showed themselves in ways that were often easy to observe. Perhaps the most marked feature of such cases was the increase of ascertainable fears. These were investigated systematically by means of a supplementary questionnaire. The fears showing the most striking increase were fears of noise, of the dark, and of strange persons. Among children who had experienced raids only sixteen showed abnormal signs of fear at noises before the raids and before evacuation; whereas forty-two showed them afterwards. The increase in the fear of the dark was almost as marked, rising from sixteen to twenty-five. The fears of strange people and of animals showed a smaller increase. The second feature of these cases were increased disturbances of sleep. Before air raids had been experienced (including those children who had not experienced air raids at all) sleep talking was noted in only 6 per cent of the cases; among those children who had actually experienced raids it was noted, even after evacuation, in 46 per cent. Dreaming, and particularly nightmares, also exhibited a remarkable increase. A third feature was a reversion to incontinent habits. Six cases of enuresis were reported among the children who had experienced air raids; only one among those who had not experienced them. Children between the ages of one and four seem to suffer most; older children far less.

III.—SUMMARY.

(1) The amount of unsatisfactory adjustment noted among evacuated children of pre-school age was much greater than that noted by previous investigators among older children of school age. On the whole, the evidence suggests that this is not essentially due to the greater susceptibility of children at these tenderer years, but rather to the less satisfactory arrangements made for the billeting of these cases.

(2) There is some evidence that the youngest children (under two) adjust themselves somewhat better than the older pre-school children (between two and five) and (at these early ages) the less intelligent children somewhat better than the brighter.

(3) Children of a stable temperament adjust themselves decidedly better than children of an unstable temperament. And in general the emotional character of the child himself (and of the mother when she accompanies him) forms a far more important factor than the non-psychological conditions on which attention has been chiefly focussed in recent discussions of the problem.

(4) Children who are accompanied by their own brothers and sisters (as well as by their mothers) adapt themselves somewhat more readily, but the difference is not so marked as among children of school age. When there are no brothers and sisters accompanying the child, then it appears to be a slight advantage for other young children to be present in the same billet.

(5) Children who had been accommodated in several different billets in quick succession are found to be unsatisfactorily adjusted. In most cases, though not in all, the cause is the unsuitable character of the billet rather than the mere fact of change, or even the character of the child himself.

(6) Even after three to six months in a quiet area, children who have experienced air raids are apt still to show nervous after-effects. The cause of this more lasting nervous disturbance is not so much the mere fact of having experienced a raid, nor even the severity of the raid, or the length of the raid period : it is rather the amount of fear that the child himself has experienced at the time of the raid. And in this fear the chief factor was not so much the noise or the proximity of the raid as the amount of fear that the child's own mother had exhibited when in the child's vicinity. These after-effects were apt in their turn to militate against successful adjustment to the new conditions of evacuation.

IV.—NOTE ON STATISTICAL PROCEDURE.¹

The Point-Distribution Coefficient.—In most reports on evacuation, published and unpublished, the investigators have been content merely to demonstrate the presence of causal relations, usually employing one of the recognized tests of statistical significance, such as the square contingency (χ^2). Rarely do they go on to estimate its amount. Yet, if some simple or familiar scale can be found for measuring the importance of the various causal factors, this extra information is surely worth the small additional labour. With a fourfold table, like those commonly printed in reports of these researches, a coefficient of correlation can very quickly be computed ; and bears a particularly simple interpretation.

Take, for example, the following table showing the relation between satisfactory adjustment and changes of billet among the hundred children studied in my survey.

TABLE II.

Billet.	Adjustment		Total
	Satisfactory.	No. Satisfactory	
Changed	14	22	36
Not Changed	42	22	64
Total	56	44	100

¹ Formal proofs of the statements given below will be found in Burt's *Laboratory Notes on Correlation*, from which the following summary is mainly taken. A more detailed discussion of available methods will be found in Appendix II to *The Backward Child*.

It will be seen that, of the fifty-six who made satisfactory adjustments, fourteen, i.e., 25 per cent, had changed their billets; and of the forty-four who made unsatisfactory adjustments only twenty-two, i.e., 50 per cent; a difference of $(25 - 50) = -25$ per cent. Again, of the thirty-six who had changed their billets, only fourteen, i.e., 39 per cent, made satisfactory adjustments; of the sixty-four who had not changed as many as forty-two, i.e., 66 per cent; a difference of $(39 - 66) = -27$ per cent.

These differences between the percentages or proportions are the two regressions, -25 and -27 . And the point-distribution correlation, ϕ (which is technically identical with the 'root mean square contingency') is simply their mean, viz., $-\sqrt{25 \times 27} = -26$.

Interpretations—There are three ways of rendering this coefficient intelligible.

(1) If doubly symmetrical (or nearly so) a fourfold frequency table showing imperfect correlation may be regarded as made up by adding two such tables, the total number in each table being in proportion to its presumable importance in the combined group, namely, (i) a table in which the cases show *perfect* correlation, and (ii) a table in which the cases show *perfect absence* of correlation. The correlation coefficient will then indicate the proportions required; that is, it will give the relative number of cases showing complete correlation in the combined group. Suppose, for example, the coefficient of correlation (ϕ) had been $.25$. That is a proportion of 1 to 3, or 25 to 75 out of 100. Accordingly, if there was complete correlation in twenty-five cases and no correlation in seventy-five, we should obtain (assuming all sub-totals to be equal in either component table)

$$\begin{bmatrix} 0 & 12\frac{1}{2} \\ 12\frac{1}{2} & 0 \end{bmatrix} + \begin{bmatrix} 18\frac{1}{4} & 18\frac{1}{4} \\ 18\frac{1}{4} & 18\frac{1}{4} \end{bmatrix} = \begin{bmatrix} 18\frac{1}{4} & 31\frac{1}{4} \\ 31\frac{1}{4} & 18\frac{1}{4} \end{bmatrix}$$

which is virtually Table II reduced to Yule's 'equalized standard form' (ω).

In practice, the sub-totals are commonly unequal (e.g., 50, 44, 36, 64 in Table II). When this inequality is the result of artificial selection, it would still seem best to compute ϕ for the corresponding equalized table. Such a coefficient was used, for example, by Burt in his Item-analysis of the Binet-Simon Tests (*Mental and Scholastic Tests*, pp. 197, 205, and Appendix II). Its calculation, or that of ϕ without equalization, incidentally provides a convenient check on the computation of the more elaborate tetrachoric coefficient.

(2) Alternatively, with an equalized or completely symmetrical table, we may say that the correlation represents the excess of concordant over discordant cases, e.g. $(18\frac{1}{4} + 18\frac{1}{4}) - (31\frac{1}{4} + 31\frac{1}{4}) = -25$ per cent. As before, the principle is only approximately true if the totals are unequal, as in Table II. Here the figures are $(14 + 22) - (42 + 22) = -28$ per cent.

(3) A third method of interpreting the coefficient is to say that it represents the *increase in the probability* of concordant cases (or discordant cases, if the coefficient is negative) which the correlation causes. Thus, with no correlation (that is, by sheer chance with equal odds) we should expect 50 per cent of the cases to be discordant, i.e., (a) to have changed their billets and be maladjusted, or (b) not to have changed and be satisfactorily adjusted. With a correlation of -26 we should expect $50 + .26 \times 50 = 63$ to be discordant. (The fact that the actual figure is 64 is again due to the inequality of the totals.)

Test of Significance.—The test of statistical significance is extremely simple. From the relation between χ^2 and ϕ it follows that the standard error of ϕ may be taken as $1/\sqrt{N}$. Hence, adopting the usual criterion, ϕ/\sqrt{N} must be greater than 2, if the correlation is to be significant. Here, with $\phi = -26$ and $N = 100$, the odds are 99 to 1 against a coefficient as large as this being the result of the chances of random sampling.

The Normal or Tetrachoric Coefficient.—Strictly speaking, as noted above (p. 177, footnote¹), this simple way of calculating a correlation is only valid when we can safely regard the factors as a matter of mere presence or absence (e.g., presence or absence of the mother, or again sex, in which case the child must be either male or not male). But in dealing with psychological conditions such as intelligence, temperamental stability, and the like, the variables ought rather to be regarded as continuously graded quantities, more or less normally distributed; so that a twofold classification into intelligent and not-intelligent, satisfactory and not-satisfactory, really involves an over-simplification of the facts. In such cases it is better

to calculate the corresponding 'normal' or 'tetrachoric' correlation, γ_1 . If the lines of classification are not far from the averages or medians, then $\gamma_1 = \sin \frac{\pi}{2} \phi$, that is (unless the correlation is high) 1.5ϕ approximately. For the above table, therefore, the tetrachoric correlation is approximately $1.5 \times .26 = .39$ (more exactly .38). If the more precise figure is required, it can readily be obtained by using Pearson's *Tables for Statisticians*, Vol. II, Tables VIII and IX.

The algebraic formula for a tetrachoric coefficient looks at first sight somewhat forbidding, and Pearson's long explanation of his tables (pp. lii-lxxviii) still more formidable. That, no doubt, is why a tetrachoric correlation is so seldom computed by the educational or psychological investigator. In America it has recently been employed quite freely, and those who use it generally take their values from graphs, similar to those prepared by Burt (*Mental and Scholastic Tests*, Fig. 27, p. 219; cf. *The Backward Child*, pp. 672-3: a convenient set has been published by Thurstone). But the preliminary computations that are needed before such graphs can be used may take almost as much time as those required in using Pearson's tables; and the results, of course, are far less exact. In their studies of evacuation, Slade and Davidson, as we have seen, preferred to calculate ϕ ; Thouless and Straker simply calculate χ^2 ; in my own thesis I have given all three coefficients. Simple working instructions for calculating the tetrachoric coefficient by interpolation will be found in the Appendix to my thesis, or in the *Laboratory Notes* of the department on which my Appendix was based.

V.—REFERENCES.

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A FURTHER INVESTIGATION OF PRE-COLLEGE TEACHING EXPERIENCE AND OTHER FACTORS IN THE TEACHING SUCCESS OF UNIVERSITY STUDENTS.

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I.—Preamble:

- (a) *Conditions of experiment and the material available.*
- (b) *The number and distribution of experienced students, 1930-39.*

II.—*The relation between pre-college teaching experience and teaching grade achieved in the year of professional training.*

III.—*The relation between pre-college teaching experience and academic achievement.*

IV.—*The relations between entrance qualifications, pre-college teaching experience, teaching success, and academic achievement.*

V.—*The relations between pre-college teaching experience and success in professional theory tests.*

VI.—*Summary of results and conclusions.*

I.—PREAMBLE.

IN the present investigation we have examined the academic records and the success achieved during the year of professional training by students at the University College of Wales, Aberystwyth, for nine years, 1930-38

The purpose of the investigation is two-fold: first, to estimate how far the 1930-38 records bear out certain conclusions formulated in Mr. Pinsent's article,¹ and, second, to follow up some of the points raised by Professor Turnbull² in connection therewith.

(a) *Conditions of experiment and the material available.*

The records of 786 students (328 women and 458 men) have supplied the data for examination. The following information was available for each student:

(a) Duration and type of pre-college teaching experience. The time spent in teaching was reckoned in months. Three types of experience, viz., uncertificated assistant, student teacher, and bursar, were distinguished.

(b) Teaching grade achieved in the practical tests during the year of professional training. This was determined by pooling the estimates of each student's teaching ability given by supervisors, head masters, and head mistresses. The results were checked by His Majesty's Inspectors and the External Examiner for the University.

(c) Academic achievement, showing the time taken and the grade obtained.

(d) Scores in (i) theory, (ii) practice, and (iii) special method papers set at the end-of-session examinations during the year of professional training.

¹ A. PINSENT: "Pre-College Teaching Experience and other Factors in the Teaching Success of University Students."—*This Journal*, 1933, Vol. III, Part II, pp. 109-126, and Part III, pp. 201-221.

² G. H. TURNBULL: "The Influence of Previous Teaching Experience on Results obtained by Students in a University Department of Education."—*This Journal*, 1934, Vol. IV, Part I, pp. 1-10.

(e) Entrance qualifications, i.e., higher school certificate, or school certificate (matriculation equivalent).

Comparison of the present findings with those of Pinsent's investigations (1922-29) seems legitimate, since the students were drawn from the same areas, and the staff of the Aberystwyth Training Department changed very little between 1930 and 1939.

There are, however, some differences in the conditions affecting entry into the department, notably :

(a) No intelligence tests were given to the students during the 1930-39 period, so investigation in this field was impossible, and we are unable to take up Professor Turnbull's suggestion as to the influence of possible differences in intelligence between various groups.

(b) War experience and war conditions do not affect the pre-college teaching experience of the 1930-39 sample of students. This would remove the difference between uncertificated assistants and student teachers which Professor Turnbull mentions in his article.¹

(c) In the years covered by our enquiry preference in selecting candidates for the Training Department was shown to those applicants who had obtained credits in three subjects at the higher school certificate examination, rather than to those who offered pre-college teaching experience plus a 'matriculation equivalent.'

(d) The increased number of 'higher' candidates produced a more select group, academically, than the 1922-29 sample. This fact will necessarily affect the size of correlations as compared with those worked out for both the investigations previously undertaken.

(e) In these later years the greater economic pressure exerted by the difficulty in obtaining posts after leaving college resulted in a somewhat more serious attitude to work in the professional year.

The types of teaching experience recorded between 1930-39 also differ a little from those described in Pinsent's enquiry.

(a) 'Bursars' are grouped, in our sample, with the experienced students. They had two months' teaching experience under the Board of Education Regulations for Bursarships. This involved four periods of two weeks' teaching during long vacations, while the student continued with advanced course work at school.

(b) The 1930-39 records showed that no woman had combined experience as student teacher and uncertificated assistant. Men who had such 'mixed' experience are grouped under the heading 'Uncertificated Assistant.'

(c) No 'short course' students are included. All had at least three years' academic training.

(b) *The number and distribution of students with pre-college teaching experience.*

Owing to the preference for candidates with three credits in the higher school certificate examination, and to changes in the student teacher system, which diminished its appeal as a preliminary to university study, this 1930-39 sample contains only 194 students with pre-college teaching experience - 53 women and 141 men, as compared with

¹ G H TURNBULL: Op. cit., p. 5.

118 women and 192 men in Pinsent's sample. Of our 194 cases, fifty-three had less than six months' teaching experience, 120 had from six to eighteen months, and twenty-one more than eighteen months. It may be of interest, in view of certain results set out below, to note the details of these twenty-one students' experience. Eighteen were men, three women; sixteen of the men had U.A. experience, and the remaining two were S.T.s. The three women were U.A.s. Thus we may take it that the effects of 'long' experience are likely to appear in the U.A. groups only. We have, however, considered the results of the 'long' experience apart from the U.A. groups for purposes of comparison.

TABLE I.—DISTRIBUTION OF EXPERIENCED STUDENTS OVER THE PERIOD 1930-1939.

Type of Experi- ence	1930.		1931.		1932.		1933.		1934		1935.		1936.		1937.		1938.		Totals	
	M.	W.	M.	W.	M.	W.	M.	W.	M.	W.	M.	W.	M.	W.	M.	W.	M.	W.	Men.	Women
U.A.	3	0	4	0	3	1	3	3	3	2	3	1	0	1	0	0	2	0	21	8
S.T...	12	7	13	2	10	4	5	2	5	2	11	2	12	5	8	1	8	3	64	28
Bursar	3	3	4	2	3	0	7	1	3	4	1	2	7	2	2	1	6	2	38	17
Totals	18	10	21	4	16	5	15	6	11	8	15	5	19	8	10	2	16	5	141	53

Table I shows how many experienced students of each type were admitted every year from 1930 to 1939, and indicates the distribution of each type over the period examined. It is evident that there is no tendency for students of any one type to 'bunch' in any particular year, and nothing to suggest that any distinction between types of experience was made at any time. Thus Turnbull's argument about the possible effect of a bunched distribution is answered.

The range and the grouping of experience in the present sample is similar enough to Pinsent's to enable comparable conclusions to be drawn.

II.—THE RELATION BETWEEN PRE-COLLEGE TEACHING EXPERIENCE AND TEACHING GRADE ACHIEVED IN THE PROFESSIONAL YEAR.

TABLE II.—NUMBER AND PERCENTAGE OF MEN AND WOMEN IN EACH TEACHING GRADE

	A. A-.	B+.	B	B-C. +	C.	C-, D, E.	Totals.
Men .. {	No. .. 29	58	88	187	72	24	458
	%..... 6	13	19	41	16	5	
Women .. {	No. .. 28	50	71	146	21	12	328
	%..... 9	15	22	45	6	4	
Both .. {	No. .. 57	108	159	333	93	36	788
	%..... 8	14	20	42	12	5	

The number and percentage of men and women in each teaching grade is shown in Table II. By allocating points for the various teaching grades according to the following equivalents :

Teaching Grade	A, A-.	B+.	B	B-, C+	C	C-, D, E,
Teaching Mark ...	80	70	60	50	40	30

and by taking as successes the A, A-, B- and B grades, while C-, D and E are reckoned as failures, we obtain the results shown in Table III.¹ This method of assessment is similar to that employed for the previous *Abervstwyth* sample.

TABLE III.—RELATION BETWEEN TEACHING EXPERIENCE AND TEACHING ACHIEVEMENT.

	Men				Women.			
Type of Experience	No. of Students.	Per cent Successes.	Mean Points.	Per cent Failures.	No. of Students.	Per cent Successes	Mean Points.	Per cent Failures.
U.A ..	21	52	59.5 ± 1.7	0	8	37.5	52.5 ± 3.3	12.5
S.T. ..	94	32	52.7 ± 1.1	2	29	46	58.2 ± 1.5	0
Bursar.	36	31	51.6 ± 1.7	11	17	47	53.5 ± 1.9	12
Nil ..	317	40	53.8 ± 0.5	6	275	45	58.5 ± 0.5	3
All ..	458	39	53.7 ± 0.3	6	328	46	56.4 ± 0.5	4

Inspection of Table III reveals the following significant differences when the mean points for each group are taken as indications of achievement¹:

U.A. Men—Inexperienced men $59.5 - 53.8 = 5.7 \pm 1.76$

$$U.A. Men - S.T. men = 59.5 - 52.7 = 6.8 \pm 2.03$$

As Table III does not show results for students grouped according to length of experience, we give the results (achievement expressed in mean points) here:

16² U.A. men with over eighteen months' experience

16 U.A. men with over eighteen months' experience

$$= 84 \text{ S.T. men} \quad 61.6 - 52.7 = 8.9 \pm 2.3$$

16 U.A. men with over eighteen months' experience

$$36-\text{Bursar men} \quad 61.6 - 51.6 = 10.0 \pm 2.6$$

These findings agree with Pinsent's conclusions that:

(a) For the women there was no significant difference between the averages of the experienced and the inexperienced groups. Neither type of experience nor length of time spent in pre-college teaching seemed to affect the teaching grade when calculated.

¹ In all tables and in the text Probable Errors are indicated by the \pm sign, and are placed after the figures to which they refer.

³ These figures give the number of students in the group named.

in mean points. The women U.A.s (a group which included the three students with over eighteen months' experience) are actually inferior to all other groups, more markedly so than in the 1922-29 sample, but as this is a very small group no general conclusion can be drawn from our figures.

(b) On the average, student teacher experience produces no appreciable effect on the teaching grade of the men

(c) The bursar men seem to be no better and no worse than the inexperienced men.

(d) Men with U.A. experience have a relatively high mark for teaching achievement at college, showing superiority to men with S.T. experience and to inexperienced men. These U.A. men were not chosen by the college for admission because of superior teaching ability, since no adequate evidence of such ability was available at the time of selection. However, it is possible that some kind of selection by the L.E.A. or other employers or of 'self-selection,' i.e., ambition to gain a better position in the teaching profession, or greater interest in the art of teaching, due to the fact that these men had been responsible for the classes they taught, operated within the group. We may offer this explanation of the men U.A.s' superiority in teaching achievement, which contrasts with the women U.A.s' performance.

The proportion of successes and failures in each group (as shown in Table III) further demonstrates the superiority of the U.A. men and the inferiority of the U.A. women to all other groups, comparing men and women separately. The bursars present an interesting feature. A larger proportion of failures is shown in comparison with the 'no experience' group, and with the whole sample, for both men and women. With the caution required for statements regarding small numbers, we may suggest that this weakness of the bursars is due to the desire of the less academically able higher school certificate entrants to obtain some teaching experience as an additional qualification for entry into the training department. The results of university work seem to support this view.

On the whole, however, the present sample confirms the conclusions formulated by Pinsent regarding the relation of pre-college teaching experience and teaching grade achieved during the year of professional preparation. As the influence of war conditions did not affect the school life of these students to any appreciable extent, Turnbull's suggestion that¹ "if the uncertificated assistants were mostly the product of pre-war school conditions, whereas the student teachers and others were predominantly the product of war and early post-war school conditions, this difference may have produced results that vitiate the conclusions drawn from the collected data" (for the 1922-29 period) seems to be refuted. Again, since Table I indicates no symptoms of 'bunching' another point raised by Turnbull does not affect the present conclusions. Both the general relationship of the men's scores to each other, and the women's to each other, as shown in Table II, bear out Pinsent's conclusions.

III.—THE RELATION BETWEEN PRE-COLLEGE TEACHING EXPERIENCE AND ACADEMIC ACHIEVEMENT.

The academic grades involved were I, IIa, IIb, and third class honours; pass degrees with three or two final courses; degree not completed. Considering a pass degree with three final courses as equivalent to a third class honours, the grades were rated as

¹ G. H. TURNBULL: Op. cit., p. 5. 'War' = the last war.

follows : 80, 70, 60, 50, 45 respectively, if completed in three years. If the degree took four years to complete the classes were rated at 80, 65, 55, 40 and 35 respectively. For a degree not completed, whether in three or four years, twenty-five points were allowed. Scores of sixty-five and above were counted as successes, forty and below as failures. By this means the results in Table IV were obtained.

TABLE IV.—RELATION BETWEEN PRE-COLLEGE TEACHING EXPERIENCE AND ACADEMIC ACHIEVEMENT

	Men.				Women.			
Type of Experience	No of Students	Academic Percentage Successes	Mean Points.	Academic Percentage Failures.	No. of Students.	Academic Percentage Successes,	Mean Points	Academic Percentage Failures.
U.A. . .	21	15	49.8 ± 1.8	24	8	25	47.5 ± 4.2	62.5
S.T ..	84	32	55.3 ± 1.1	22	28	49	54.6 ± 2.2	39
Bursar	36	36	56.8 ± 1.7	9	17	30	56.2 ± 2.5	12
NII ..	317	50	62.5 ± 0.5	7	275	45	60.3 ± 0.5	11
All	458	44	60.1 ± 0.4	11	328	43	59.3 ± 0.5	14

Table IV shows the following significant differences in mean points for the various groups :

Inexperienced Men—U.A. men 62.5 - 49.8 = 12.7 ± 1.8

Inexperienced Men—Bursar men 62.5 - 56.8 = 5.7 ± 1.8

Bursar Men—U.A. men 56.8 - 49.8 = 7.0 ± 2.4

Inexperienced Women—U.A. women $60.3 - 47.5 = 12.8 \pm 4.2$

The groups with the greatest length of experience (i.e., sixteen U.A. men and three U.A. women) were compared with the others, and as the results do not appear in Table IV we give the significant differences here.

317 Inexperienced Men—16 U.A. men with over eighteen months' experience 62·5 - 51·5 = 11·0 ± 2·4

275 Inexperienced Women—3 U.A. women with over eighteen months' experience $60\cdot3 - 41\cdot6 = 18\cdot7 \pm 3\cdot7$

28 S.T. Women—3 U.A. women with over eighteen months' experience $54\cdot6 - 41\cdot6 = 13\cdot0 \pm 4\cdot2$

17 Bursar Women—3 U.A. women with over eighteen months' experience $56 \cdot 2 - 41 \cdot 6 = 14 \cdot 6 \pm 4 \cdot 5$

Table IV further demonstrates the tendency of experienced groups to show inferiority in academic achievement compared with the inexperienced students when the percentage of successes and failures in each group is examined.

These figures support the following conclusions with respect to the relation between pre-college teaching experience and academic achievement:

(a) Contrary to the evidence afforded by the 1922-29 sample, the U.A.s, both men and women, are significantly inferior to inexperienced students in degree work as measured by mean points and percentages of successes and failures. The small numbers concerned as well as their academic performance suggest that the enterprising type of student, who in Pinsent's sample obtained practice in teaching, now (because of the rapid development of higher courses in secondary schools since 1926) proceeds to higher school certificate work, and it is the mediocre student (from the academic standpoint) who takes up U.A. posts at the present time. Persistence, application and drive play a significant part in scholastic success, and it may well be that lack of these qualities accounts for the inferiority of the U.A.s' academic achievement in the present sample.¹

(b) The U.A. students, men and women, who had more than eighteen months' experience show inferiority to students who had no pre-college teaching experience. It may be suggested that the length of time spent in teaching with responsibility for a class hampers adjustment to the conditions of university work, and thus affects ultimate achievement. However, the size and variability of these U.A. groups warn us to advance this view with caution.

(c) The men and women bursars show a relative poverty in the percentage of successes, and the men bursars are significantly inferior to the inexperienced men on the showing of mean points.

(d) Table IV reveals a general tendency towards a poorer academic record in the case of students with S.T. and U.A. pre-college teaching experience.

On the whole, these conclusions confirm previous findings by Pinsent and Turnbull that the preference for teaching experience has selected a number of candidates of mediocre academic ability.

IV.—THE RELATION BETWEEN ENTRANCE QUALIFICATIONS, PRE-COLLEGE TEACHING EXPERIENCE, TEACHING SUCCESS, AND ACADEMIC ACHIEVEMENT.

Certain differences between the results of the present investigation and those obtained for the 1922-29 sample prompted the examination of the whole group who had obtained previous teaching experience from a fresh point of view.

The present sample of students contained two distinct sub-groups within the experienced group, i.e.,

- (a) Entrants who had obtained the higher school certificate with three credits;
- (b) Entrants who had only obtained matriculation or the equivalent school leaving certificate.

When the experienced students were divided according to type of pre-college teaching we found that for the U.A.s comparison between higher and school certificate entrants was impossible as there was only one higher entrant. For the bursars the number of higher

¹ On this point see D. W. OATES: "The Relation of Temperament and Intelligence to Scholastic Ability."—*The Forum of Education*, Vol. VII, Part III, November, 1929, pp. 171, ff.

entrants was again too small to allow of reliable conclusions from the results. This left the S.T. group. It seemed then desirable that we should try to ascertain whether the year of student teaching had a similar effect on both higher and school certificate S.T. sub-groups.

As we have shown in Sections II and III above, pre-college teaching experience makes no significant difference to the teaching success of S.T. students, and, at the same time, their academic achievement is, in the main, adversely affected by this previous teaching experience.

Scores, mean points, successes and failures were calculated as indicated for Tables III and IV above. Consequently, the following figures were obtained.

Description of Group	No. in Group	Teaching Grade			Academic Achievement			
		Mean Points	Successes %	Failures %	Mean Points	Successes %	Failures %	
Women	S T. Women..... (3-credit Higher)	4	70.0 ± 4.1	75	—	70.0 ± 4.05	75	—
	S T. Women ... (School Certificate)	17	54.1 ± 1.5	29	—	47.05 ± 2.5	23	35
	Inexperienced Women (3-credit Higher)	129	57.8 ± 0.7	54	8	63.8 ± 0.6	58	9
	Inexperienced Women (School Certificate)	86	53.8 ± 0.8	35	4	55.9 ± 0.9	32	19
Men	S.T. Men (3-credit Higher)	18	54.4 ± 1.4	44	—	55.9 ± 1.9	58	6
	S.T. Men (School Certificate)	59	52.4 ± 0.9	30	3	52.0 ± 1.3	25	28
	Inexperienced Men.. (3-credit Higher)	152	54.7 ± 0.7	42	5	65.1 ± 0.7	59	7
	Inexperienced Men.. (School Certificate)	107	53.4 ± 0.8	38	9	58.2 ± 0.9	40	19

These figures lead to the following conclusions :

(a) With regard to teaching achievement the 'higher' women entrants, both S.T.s and inexperienced, were significantly superior to 'school certificate' women entrants, S.T.s and those who had no previous teaching experience. For the men, no such difference appeared. The percentages of successes and failures also show disparity between the men and the women. As the number of women S.T.s concerned is small, we cannot go further than the statement that, on the whole, S.T. experience before entering college, whether combined with 'higher' or 'school certificate' entrance qualification, does not necessarily mean better teaching achievement in the year of professional training.

(b) Since there was a significant difference between the mean points for academic achievement between the inexperienced 'school certificate' groups and the S.T. 'school certificate' groups, in favour of the students who had no pre-college teaching experience, and since no such difference was present between the mean points of the inexperienced

and S.T 'higher' groups, it would seem that the break of a year after success in the higher certificate examination is not followed by poorer academic achievement in this sample.

Some minor points of interest arising from results (which for the sake of brevity we have not set down here in detail) may now be considered.

(a) The U.A. men (eighteen in number) were significantly superior to all other groups in teaching achievement. The U.A. women (a group of seven) showed no such superiority. All the U.A.s except one were school certificate entrants. This result coincides with the findings in Section II above, and in spite of the danger of drawing conclusions from small numbers, it is interesting to note the reappearance of the difference in teaching skill shown by men and women in this second Aberystwyth sample. If the possibility of different achievement as between men and women is kept in mind during further research, more light may be thrown on the matter.¹

(b) In academic achievement, both men and women U.A.s were inferior to the 'higher' entrants. This result confirms our belief that in this sample entrance qualifications are more closely connected with subsequent academic achievement than pre-college teaching experience is.

(c) The results for bursar men and women showed no significant difference between 'higher' and 'school certificate' entrants in teaching achievement. In degree work also there was no difference between 'highers' and 'school certificates.' The small numbers concerned (seventeen highers and nineteen school certificates) may account for this phenomenon, but we suggest that it points to the general mediocrity of bursar students in this sample.

Finally, we may say that :

(a) As far as the men are concerned, the type of teaching experience is significant and not the mere fact of having such experience.

(b) A year's break in academic studies adversely affects university degree work in the 'school certificate' groups of men and women, but not in the 'higher' groups.

(c) While it has been shown for both the Sheffield and Aberystwyth samples that pre-college teaching experience, as at present organized, has in general no significant effect on teaching success, that does not mean to say that pre-college teaching experience cannot be advantageous.

(d) If pre-college preparation of some different kind is considered, then the most appropriate period for such work would seem to be after the higher school certificate course.

V.—RELATION BETWEEN PRE-COLLEGE TEACHING EXPERIENCE AND SUCCESS IN PROFESSIONAL THEORY TESTS.

The argument that pre-college teaching experience helps a student to understand and profit by the theoretical work in a course of professional training has been considered for both the Sheffield and the 1922-29 Aberystwyth samples. The 1930-39 students were examined from this point of view to see whether the results accorded with previous findings.

¹ We have noted the difference between men and women 'Higher' and 'School Certificate' entrants above

TABLE V.—RELATIONS BETWEEN PRE-COLLEGE TEACHING EXPERIENCE AND SUCCESS IN THEORY PAPERS DURING PROFESSIONAL TRAINING.

Type of Experience.	No. of Students.	Theory.		Practice		Special Methods.		
		Mean Points.	Successes	Mean Points.	Successes	Mean Points	Successes	
Men.			%		%		%	
	U.A.	21	45.8 ± 0.9	14	48.6 ± 1.3	29	49.1 ± 1.2	24
	S.T.	84	45.2 ± 0.5	10	48.9 ± 0.6	21	51.2 ± 0.5	29
	Bursar	36	47.5 ± 1.1	28	49.8 ± 1.1	33	51.0 ± 0.97	28
	Nil	317	48.4 ± 0.3	22	51.3 ± 0.3	38	51.6 ± 0.3	38
Women	All	458	47.6 ± 0.3	20	50.5 ± 0.3	34	51.4 ± 0.2	35
	U.A.	8	45.1 ± 1.3	—	47.0 ± 1.2	12.5	48.4 ± 1.25	—
	S.T.	28	46.8 ± 1.07	21	51.3 ± 1.04	43	52.9 ± 1.07	43
	Bursar	17	48.2 ± 1.1	24	52.6 ± 1.3	47	51.1 ± 1.07	24
	Nil	275	48.6 ± 0.3	24	52.5 ± 0.3	43	53.0 ± 0.3	44
	All	328	48.8 ± 0.3	23	52.3 ± 0.3	42	52.8 ± 0.3	42

Table V shows the mean points and percentages of successes for the various groups divided according to pre-college teaching experience in (a) theory of education, (b) practice of education, and (c) special method. Success in these theory papers was taken to mean a score of 55 per cent or more. Since the examiners, syllabuses, and methods of marking have not changed in any revolutionary fashion since the previous enquiry, comparison is possible between the two Aberystwyth samples.

The differences between the mean points of U.A. and inexperienced men, and between S.T. and inexperienced men were significant, for the theory of education papers.

For the women, significant differences were found in all three papers between the U.A. and inexperienced groups.

Both men and women showed a tendency towards a lower percentage of successes among the experienced groups.

The following conclusions were formulated from the evidence given in Table V:

(a) Unlike the findings for the 1922-29 sample the present figures show weakness in the women U.A.s' results. For the men, U.A. experience does not appear to be associated with lower theory scores, as their results are only inferior to those of the inexperienced men in one paper. This difference between the men and women U.A.s is consistent with previous results for this sample (see Table III and Section IV above), so we mention it with the reservations due to the small numbers involved.

(b) The weakness of the U.A.s in comparison with the inexperienced groups of men and women may perhaps be explained by the influence of entrants with a three-credit higher in raising the average of the inexperienced group, since the relation between entrance qualifications and success in both academic work and practical teaching during

the professional course is, on the whole, closer than that between pre-college teaching experience, success in degree work, and achievement in practical tests of teaching at the university.

(c) Outside the U.A. group the general level of the women students' performance was, in the main, better than that of the men, as in the previous Aberystwyth sample.

(d) The relative weakness of the men S.T.s in this sample, compared with the inexperienced men, is greater than that observed for the 1922-29 students; but it is not enough to justify any difference in the conclusion that S.T. experience does not make any significant impression on the theory scores.

(e) On the whole, the bursars, men and women, do no better and no worse than the inexperienced groups.

Before arriving at a general conclusion another point must be made clear. The weakness of the men and women U.A.s which appears in Table V suggests that entrance qualifications may have some bearing upon success in theory papers during the professional course. Entrance qualifications, as we have seen, select entrants who differ in academic ability, according to the qualifying examination passed before entering college. As Tables III and IV showed, the U.A.s (who entered with a matriculation equivalent) were consistently weaker in academic achievement, and that the women were also weaker in teaching skill than the inexperienced groups. It seemed, then, worth while to investigate the relationship between academic achievement and success in practical tests of teaching as well as in theory papers during the training year, in order to compare the results obtained with those for the 1922-29 students.

Table VI was constructed in order to examine this question. It shows the mean points and percentage successes of groups (divided according to academic achievement) in the three theory papers and in teaching grade. Success in the written papers was taken to mean a score of 55 per cent or over, and in the teaching grade a score of B or above (as for Table III). Results for men and women are shown separately. The groups in Table VI are divided as follows : (i) I and IIa Honours ; (ii) all IIb Honours, with III Honours, Pass Degrees (three or two Finals) completed in three years ; (iii) III Honours, Pass Degrees (three or two Finals) completed in four years ; (iv) students who failed to complete a degree course.

The results obtained by comparison of mean points showed :

(a) For the men, that in all cases except two, the difference between the I and IIa Honours students and other groups were significant. The exceptions were (i) the difference in special method scores between the I and IIa Honours group and the group which included the IIb Honours with III Honours and Pass Degrees in three years, and (ii) the difference in practice of education scores between the I and IIa Honours group and the students who failed to complete a degree. The percentage successes for the men taken as a whole confirm the superiority of the I and IIa Honours students over the rest.

(b) For the women, significant differences appeared between the I and IIa Honours group and all others in every case. The percentage successes emphasize the superiority of the I and IIa Honours women over other groups.

Table VI provides evidence to support the conclusions that :

(a) For both men and women, good academic success is closely linked with success in both theory papers and in tests of teaching ability during the professional course.

Teaching Experience and Teaching Success

TABLE VI.—RELATIONS BETWEEN ACADEMIC ACHIEVEMENT AND SUCCESS IN THEORY PAPERS AND TEACHING TESTS DURING THE PROFESSIONAL YEAR.

Academic Achievement	Theory.		Practice.		Special Methods.		Teaching Grade.		
	No. of Students.	Mean Points	Successes %	Mean Points.	Successes %	Mean Points	Successes %	Mean Points.	Successes %
I and II _a Honours	204	50. 0 ± 0.4	23	52. 9 ± 0.4	46	51. 6 ± 0.4	46	57.0 ± 0.55	49
All IIIB with III, 3 and 2 Finals in 3 years	180	46. 9 ± 0.4	14	50. 1 ± 0.4	30	50. 1 ± 0.6	28	51.0 ± 0.6	28
III Hons with 3 and 2 Finals in 4 years	64	42. 4 ± 0.7	9	45. 5 ± 0.8	8	48. 4 ± 0.55	20	52.8 ± 0.9	35
Degree not Complete..	10	43. 0 ± 1.5	10	48. 0 ± 3.0	30	47. 0 ± 1.5	20	42.0 ± 2.6	10
I and II _a Honours	142	51. 5 ± 0.4	35	54. 2 ± 0.4	54	54. 3 ± 0.4	51	60.8 ± 0.7	61
All IIIB with III, 3 and 2 Finals in 3 years	146	48.65 ± 0.4	14	51.35 ± 0.4	38	52.15 ± 0.4	37	53.7 ± 0.7	33
III Hons , with 3 and 2 Finals in 4 years	32	43. 4 ± 0.8	9	48. 5 ± 0.7	19	50. 1 ± 0.8	22	52.8 ± 1.3	41
Degree not Complete..	8	42. 0 ± 2.0	12.5	44. 5 ± 2.0	12.5	47. 0 ± 2.4	25	43.8 ± 1.8	—

(b) The men do not show this superiority of the I and IIa Honours group quite as consistently as do the women. This finding may possibly be explained by those signs of difference in temperament which we have noted above; and as factors connected with temperament have a definite relationship to success in teaching and in academic work, the women, in this respect, form a more homogeneous group. Perhaps certain factors common to success in academic work and teaching, such as interest in the task, capacity for logical planning, and skill in the verbal expression of ideas, with the will to succeed, seconded by the pressure of economic circumstances, operated more powerfully on this particular sample of men.

(c) Academic ability is evidently more nearly associated with achievement in both theory and practical work during the training year than pre-college teaching experience is. Observation of students has shown that they prepare for the theory papers and the practical tests of teaching during the period of professional training with a mental attitude which is very like their approach to degree examinations. On the whole, thus, the same people do well in both. Again, as we have indicated in Section IV, entrance qualifications—which are an academic test—show a closer connection with subsequent academic achievement than pre-college teaching experience does.

If we take the evidence of Tables V and VI together, we may say that :

(a) As the results for the 1922-29 sample showed, the type of pre-college teaching experience seems to have a greater influence than the length of that experience on success in theory papers during the year of professional training. For both men and women U.A. experience (the U.A. students had a longer period of pre-college teaching than any other) seemed to accompany poorer performance in theoretical work. The U.A.s in the previous sample had not shown such inferiority ; it may appear in the present sample because the 1930-39 U.A. students entered college with a matriculation equivalent, and their performance was compared with that of groups containing a certain proportion of higher entrants.

(b) For students other than U.A.s our results confirm Turnbull's conclusion " that students with previous teaching experience did no better and no worse in educational theory than those who had no such experience."¹

(c) For our sample in general, academic ability is more closely related to success in theory papers and in practical examinations in theory than pre-college teaching experience is. Here the evidence of Tables V and VI corroborate that of Section IV. Our findings agree with Pinsent's in this respect.²

VI.—SUMMARY OF RESULTS AND CONCLUSIONS.

This enquiry was undertaken in order to discover how results from a further sample of Aberystwyth students would accord with results and conclusions formulated for the 1922-29 (Aberystwyth) and the Sheffield samples.

1.—(a) Entrants to the Training Department who were selected because of previous teaching experience form a group which showed, on the whole, mediocre academic ability. This finding confirms the conclusions of both Pinsent and Turnbull, but it should be read in close connection with the observations in 2 (a) and 3 (a) below.

¹ G. H. TURNBULL : Op. cit., p. 4.

² A. PINSENT : Op. cit., p. 210.

(b) Teaching experience as student teacher or bursar seemed to prove of no value when judged by the teaching achievement of these students during the year of professional training. The small group of men who had uncertificated assistant experience showed superiority in teaching achievement, compared with the other groups of men, while the women uncertificated assistants did not. Again, these results agree with the findings for the 1922-29 Aberystwyth students.¹

(c) Both Aberystwyth enquiries tend to show that success in teaching during the training year is more nearly related to the type of pre-college teaching experience than to the length of such experience.

(d) The results for 1930-38 corroborate Pinsent's conclusion that success in the theory papers set at the end of the professional course is more closely connected with academic preparation and ability than with pre-college teaching experience.

2.—(a) Our results indicate that, contrary to the 'Sheffield' finding, students with previous teaching experience do not necessarily do worse in degree work than 'inexperienced' students.

(b) We agree with Turnbull's general conclusion that students with pre-college teaching experience did no better and no worse in educational theory than students who had no such experience.

3.—(a) It has been shown that, in this present sample, while a year's break in academic work after passing only the senior school certificate adversely affects subsequent academic achievement, a break after success in the higher school certificate does not.

(b) Moreover, student teachers with a higher certificate entrance qualification seem more capable than their school certificate fellow-entrants of profiting by the practical teaching experience gained before coming to the university; even so, this teaching experience does not put them ahead, in their college teaching achievement, of fellow-graduates who have had no pre-college teaching experience.

¹ *Editorial Note.*—It should be recalled that the group of uncertificated assistants (men) in the previous Aberystwyth enquiry showed a significantly higher score in the Intelligence Tests than did the other men students.—See this *Journal*, III, p. 208.

THE SOCIAL AND EDUCATIONAL BACKGROUND OF THE NAZI SCHOOL SYSTEM

By HANS LIEBESCHUETZ.¹

- I.—*Introduction.*
- II.—*The national school organization.*
- III.—*Youth movement and school.*
- IV.—*Political education and cultural norms.*

I.—INTRODUCTION.

WHEN the National Socialist Party came to power they emphasized that they would have to organize the German schools on an absolutely new basis. Nobody could doubt that the new school would be used as a means for the political ends of the party, which dominated the State, and that this would necessitate far-reaching changes in personnel and ideas. The contrast between the two epochs of German school administrations separated by the year 1933 became rapidly obvious through the language in which the new leaders communicated their intentions to the teaching profession under their command. Nevertheless, important presuppositions of the school system in the Hitler Reich, as it was developed in the first year of his rule, lay in that past which he and his party abused in every speech and newspaper article.² The continuity of German educational history was not completely broken when the National Socialist Movement came to power : the party inherited a great school organization adapted to modern social needs, and they made use of educational ideas quite independent of their movement. This paradoxical continuity is dependent on some problems of contemporary European civilization under the condition of mass existence in the great cities.

II.—THE NATIONAL SCHOOL ORGANIZATION.

In the nineteenth century Germany had developed an extensive school system, comprising institutions of every kind from the elementary school to the university. It was supported and controlled by the Governments of the different lands or by subordinated authorities of municipal corporations. In many places the control of schools was completely in public hands, and everywhere the authorities exercised great power in intervening in personnel, school organization and curriculum. This predominant position of the State had its basis in an old and well-established system of bureaucracy, which was especially elaborated in the Prussian kernel of the Reich. When the Nazis came to power they had only to tighten an existing control by strict centralization in order to eliminate all

¹ The writer of this article was Assistant Master for German, History and Latin in Hamburg secondary schools from 1920 to 1934. His first experience was at two schools in working-class suburbs. From 1929 to 1934 he witnessed the experiment of a State-owned modern school at the Lichtwarkschule, where he also observed the aims and methods of schools and teachers from 1933 to 1934. He stayed in Germany till the spring of 1939 as a Lecturer in Jewish continuation schools and in the Liberal Jewish Theological College in Berlin.

² Cf. A. THORBURN: "Psychological and other Aspects of Recent Tendencies in German Education."—*This Journal*, Vol. V (1935), p. 118 ff.

tendencies towards cultural independence in the different lands of Germany. All reservations and franchises still alive in the school system were removed without haste but with great tenacity. This concerned especially schools in Southern Germany owned by the Roman Catholic Church and the monastic orders. In the earlier periods the pressure of State control on the teachers had been somewhat counterbalanced by the fact that the majority of the members of the school staffs were appointed for life. The emergency legislation of 1933 reduced and, in many cases, even nullified this guarantee. The effect of this measure, aggravated by the widespread impoverishment of the German middle class during the inflation of the early 'twenties, was felt deeply in the internal life of schools. At the beginning of its rule the party could muster comparatively few and, for the most part, not very highly esteemed, representatives of its new creed in the teaching profession. But the insecurity felt by the majority as to their own and their families' future gave these men a dominating position in the execution of regulations imposed by the new Government.

Another opportunity for starting the school policy of the National Socialist Government beside the system of State controlled schools was given as a consequence of the attempts made by the Constitution of Weimar to use education as an instrument of social reform. Since the beginning of the twentieth century the possibility of a school system suitable for this purpose had become a main topic of pedagogical discussion. All children were planned to start in the same schools for some years of elementary instruction and their further education was to be directed according to their abilities without any regard to the social standing and the wealth of their parents. Among the champions of this reform plan were few but important representatives of the academical intelligentsia, such as Paul Natorp, the philosopher and Platonician of Marburg; but their majority was found among the very active and interested leaders of the elementary school teachers' organizations. They fostered the hope that in future every child would get the training most appropriate to its abilities and that the differentiation between the trades and professions from the point of view of social prestige would be diminished. It is obvious that the predominant position of public authorities in the school administration, which existed in twentieth century Germany as a product of an older period, was the presupposition for this great plan to adapt education to the needs of modern society.

The Constitution of Weimar (1919) proclaimed the principles of this plan as the basis of Germany's school organization. There was only to be one school system, "die Einheitsschule." For this purpose it was planned that all children should frequent the same kind of school during the first four years of elementary instruction. The selection of the children eligible for secondary school education was to be achieved by an examination usually held at the age of ten, the issue of which was meant to be almost definite. This rule was carried out with varying thoroughness in the different parts of the country. Its effect was greatest in the large cities like Hamburg and Berlin, where the Social Democrats exercised a more or less permanent control over the boards administering school affairs.¹ Numerous expedients were necessary to put the idea into practice. The school fees were graded according to the income of the families, and grants were made to poor parents of gifted children. New problems arose: the teachers in charge of these examinations did not always agree with the psychologists, who a long time previously

¹ For the system and types of schools see THORBURN, L. C., pp 133-138. For the establishment of the "Deutsche Oberschule" as the normal type of secondary schools see the Ministerial Memorandum "Erziehung v Unterricht in der höheren Schule" (Berlin, 1938).

had worked out methods for such purposes. Another problem became important for the master who had to teach the classes resulting from this selection. The children showed great variations in their vocabulary, in their ability to express themselves, according to the educational standard of their homes. The school had to look for means to bridge the gulf. The social results of the great experiment were disappointing, at least at first sight. There was a rush to the secondary school, which threatened to deprive the elementary schools of almost all their gifted pupils, and to cut off all possibility of development for this kind of school, which had been a decisive item of the whole programme. No means of selection could control the tide. The method of competition for a restricted number of scholarships had never made any headway, because of the limited number it would have imposed on the gifted sons of the working-classes at their entrance into the secondary schools of the State. The Civil Service and the professions, for which the secondary schools and the universities provided the training, became the aspiration of all, because they had become an attainable object of social ascent. This became especially true in the period of the great economic depression, through which the business careers lost all their attractions.

When the Nazis came to power none of these problems was really solved. The party had no reason to break with the principles of the Weimar Constitution in this field of cultural policy. In the first period of the new régime it was ordered by decree that in future all teachers of elementary and secondary schools should have a common period of training at training colleges; and the party education by camp-life was applied to all categories of teachers of the younger generation. The party claimed to be the only legitimate creator of a new differentiation of ranks and wished to level the older social distinctions, except in the sphere of big business and industry, where the question of efficiency imposed cautiousness. Nevertheless, it is very doubtful whether the National Socialist administration was able to make any real progress towards the solution of the problems connected with the new organization of schools. In one very palpable point the conditions became definitely worse. The experiment of a comprehensive school for the nation is expensive. In spite of the low school fees the number of children in the individual classes must be comparatively small, and the teachers must have leisure to consider their experiences and to continue the studies connected with their professional task. During the period of the Republic the Social Democrats had been proud to vote high expenditure for personnel, buildings and equipment of all kind for schools. Despite theoretical claims the Nazi administration fostered other ambitions, paid heavily for them and cut down the school estimates energetically. In newly-built elementary schools the walls between the smaller classrooms were pulled down in order to lodge a greater number of children in one class.

III.—YOUTH MOVEMENT AND SCHOOL.

Since 1930 the interference of the economic crisis with the plan of a social school system for the nation has created an atmosphere favourable to the National Socialist Movement both in its struggle for power and in the development of pedagogical plans. Many of the youths who crowded the senior forms and lecture rooms of secondary schools and universities were dominated by a feeling of resentment, because of the lack of prospects for their professional future. Those who came from the strata in which the Social Democrats had their stronghold had often lost the feeling of contact with their old

surroundings. Many of these young men despised the liberalism of the constitution, which had made their own higher education possible, as a source of inefficiency. This feeling spread beyond the boundaries of schools and universities.

Before 1914 Germany had seen the most active part of her youth participating in the Youth Movement which aimed at a revival of town life by the influence of nature as experienced in hiking and outdoor activities. In the post-war period this movement had adopted a political character and split into right and left wings, both joining radical political tendencies in opposition to the existing order. They built up formations in which the fanatical profession of one's political creed was the chief weapon for conquering souls in classroom and workshop. The National Socialist Movement looked upon the right wing formations as the proper models for its own educational intentions.¹ The official memorandum on school education of 1938 describes this relationship in the following words: "Long before the National Socialist State could take hold of the public system of education there sprang up a self-contained system for the education of youth in which a new outlook was acquired not by instruction, but by common fighting, and where the virtues of character, which the movement had written on its flag, were tested and developed. The politically-minded youths had become a new instrument of education even before they had received their special mandate at the hands of the National Socialist State." Freedom for the young individuals to build up their lives in conformity with their own ideas had been the battle-cry of the Youth Movement before 1914. When the Nazi Party included a later generation of this movement into their organization it preserved the principle that youth should be led by youth, but replaced freedom and individual responsibility by a system of strict subordination on military pattern. It was a longing for efficiency above all which made this substitution possible. This assimilation of the Youth Movement into the machine of the party was typical for its whole tendency. The military system handed down in the Prussian tradition was to be adapted to the psychological needs in a period of mass organization in order to become the predominant feature of the new life. When the Hitler Youth became the compulsory organization of the whole German youth one feature of the pre-Nazi period turned out to be particularly suitable for the purpose of the party, the feeling of contrast between the young people and the adults. The Hitler Youth claimed to be a protest of youth against their elders, who were proclaimed responsible for all which was found to be wrong in the existing order of things. The school of the period of the Republic had taken over much of the legacy of the pre-war Youth Movement, such as hiking, sport and music as a link in community life. The Nazi party emphasized the value of these activities for the training of character and mind and handed them over to the Hitler Youth. There was one tactical motive for this policy: the party looked on the teaching staffs of the manifold educational institutions, over which they had taken control in 1933, with a certain distrust as a pre-Nazi generation of unpolitical experts, and wished to counterbalance their influence. But there is another consideration recommending this dualism of school and youth movement in the rigidly controlled and centralized State education of the Third Reich. The Hitler Youth had the task of carrying on the feeling that the form which the party wished to press upon everybody was the spontaneous will of the younger generation.

¹ Cf. THORBURN, pp. 122-125, on "Youth Movement and Hitler's Pedagogical Ideas." I would lay more stress on the importance of *resentment* in the attitude of Hitler and his movement.

IV—POLITICAL EDUCATION AND CULTURAL NORMS.

The characteristic feature that the Nazi State itself fostered a competition to its own school did not in any way impair the stress laid by the party on its domineering position in school education. The transition in the curriculum of the schools had to be the model for the efficiency of totalitarian politics in the cultural sphere. But here the creative power of the movement came out to be comparatively smaller than its instinct for political opportunities and its ability for organization. The party emphasized the demand that the school had to be an instrument for political education and found again that their path had been prepared. The educational movement of the post-war period had thrown open the doors of the classrooms to the influence of public life, and had tried to shape the mind of the youth in accordance with the changed situation of the world and the Republican constitution. The Prussian school programme for secondary instruction of 1925 had, at least in its theory, aimed at the reduction of intellectualism in favour of sense training, emotion and will. Formal training, the value of which had been stressed by the school masters of the older school, was reduced in favour of the study of cultural features. It was the idea of the left wing collaborators in the reform that this change should make the curriculum more suitable for the understanding of the children of the working-classes, and that the corresponding change in history would reduce the time spent on the learning of wars and dynastic affairs. The teacher was to connect as far as possible religion, German and history, geography and art together in a synthesis in order to show how the German mind has expressed itself in different spheres, periods and places. The theory of this programme even affected the teaching of foreign languages; they had to serve to demonstrate the peculiarities of the German mind by contrast. The youths were to learn to be conscious of their own inmost substance in order to be able to shape their lives according to their knowledge. This programme of 1925 was based chiefly on Wilhelm Dilthey's philosophy of history, who had interpreted the objects of human culture as an expression of the underlying state of mind. The programme was meant to be a common ground for men of very different political and confessional views, who had worked together in completing the school reform of 1925 in ministerial departments, parliament and schools. Consequently, it was planned to be carried out in a broadminded way. In 1925 the experts in schools and universities had been afraid that positive knowledge and logical training might suffer from this reform. It was not on the lines of this criticism that the Nazi administration altered the course in 1933. It was not troubled by the apprehension that the learning in school might suffer by the influx of actual ideas. The party had watched the failure of the Weimar Constitution to impress its ideas on the minds of the youth in the State schools. There was no doubt for the Nazis that the lack of definite and concrete aims, the connection of nationalism with universal outlook and liberal toleration, was responsible for the breakdown of their adversaries. To turn the pupil into a, not only obedient, but also enthusiastic follower of Hitler's party was the dominant idea of the new education. Every boy and girl had to learn that the National Socialist Movement was the most perfect representative of the nation in its struggle for existence, and that the complete adaptation of the individual to the ends of this struggle was the highest aim which Germans might accomplish in life. Although since its beginning the movement had had a very clear understanding of the paramount importance of technical efficiency for the success of its policy (rearmament, four years' plan), this point of view was somewhat

driven into the background by the idea of school as a training ground for political education. The same doubts which scientists and industrialists had entertained towards the school of the Republic were not dispersed but increased by the first results of the Nazification, and found even a polite and cautiously termed expression in some reserved parts of the press. The organs of the party declared again and again the necessity of giving a new and firm *creed* to the rising generation, while the vanquished period had offered nothing but historical and political relativism. This application of terms taken from the religious sphere was not meant as a mere metaphor. The idea was to transfer the unconditional devotion of piety into the new political allegiance. The Party-State claimed the very discipleship which in western civilization had been the prerogative of religion. This fact is at the root of the conflict between Church and State in Hitler's Reich. The accomplishment of the Nazi plan for society would imply the end of the age in which the Bible was a determining factor of European culture. For about a thousand years life in the West has revolved around two poles: the secular and the spiritual. The new civilization is planned to have only one centre. Life in all its aspects is to be mastered by power politics. It is true that the Nazi propaganda emphasized that there is no revolution against religion, that the churches are free to prepare men for life in the other world. But this freedom of doctrine does not include any opinion on men's task and work in this world, an unbearable restriction for any religion based on the Bible. Moreover, the whole enlightenment, which is impressed on the people day after day, is designed to make it clear to young and old that the only real aim of modern man lies in the secular sphere, where leadership—command and obedience—as offered and demanded by the party, means everything. The same propaganda which had promised a free sphere to religion did all in its power to empty it of every content and every importance.

The party stigmatized the 'polytheism of values,' the relativism of the liberal period, as an expression of decay and proclaimed its own secular creed as the only means to turn this declining course of modern civilization. But the detailed elaboration of this creed, as it became necessary in the field of education, disclosed its *fictitious* character. The formulation of Nazi doctrines is subjected to a strict pragmatism. Something of the emotional atmosphere of the big propaganda meetings of the party, in which the individuals were not convinced by the logical strength of arguments but by a wave of well-calculated mass feeling, was to be transferred into the classroom. In both cases the result aimed at is blind obedience to the momentary course of the party. Every thought has to strengthen the party's hold on the people. Whether a thesis is true for its use in school or not depends on its power to kindle passion for its own cause and hatred for the adversary. All things have to be simple enough to allow a plain 'yes' or 'no.' It was to be the paramount task of school instruction to demonstrate that the principles of the party were identical with the ideas of all heroes, who through the whole of German history had fought an eternal fight against tendencies to falsify the essence of the nation and to bring about its downfall. But the movement, which claimed to end the relativism of decadent Europe, did not produce a system of norms which would have formed an adequate and permanent basis for judgments on concrete cultural questions. In the initial period of the Nazi Government the new régime was presented to the people as a revolution, which concerned mainly its internal affairs. The official declarations on foreign policy were couched in very cautious language. Consequently, at that time the instruction in European history was to be directed by the idea that every nation must have its own autonomous development

according to its racial inheritance, and every imperialism, for instance that of the Emperor Barbarossa, was to be condemned as a dangerous legacy of the dying Roman Empire. This peaceful attitude never diminished the stress on military virtue as the paramount aim of school education for the nation's children, and many shrewd Germans pondered about this discord in the philosophy of pacific nationalism. In 1941 there can be no doubt that this anti-imperialistic conception was not an expression of a permanent philosophy or creed but only a useful expedient in accordance with the party's situation of the day. In the first period of Nazi administration Charlemagne was looked upon as a man who had perverted the German mind by the introduction of Christianity into the North-German centre of pure Teutonic tradition and by his coronation as an emperor in Rome. He received the title in schools 'Charles the Saxonkiller.' About 1936 an expert succeeded in convincing Hitler that Charles' wars against the tribes between Weser and Elbe pursued the aim of unifying Germany, and consequently the leader himself proclaimed the old emperor one of his predecessors at the great party rally at Nürnberg. The same lack of firmly established judgment prevailed in the field of literature. During the time in which the Nazi party struggled for power, Kolbenheyer, the author of a large eulogy of the German philosopher and physician of the Renaissance period, Paracelsus, was held up to the youth as the greatest living novelist of the nation. In 1934 the party press discovered that the same author had written two volumes of the same size on the Jewish philosopher Spinoza. This fact was sufficient to give school inspectors of strict Nazi observance a very strong feeling of uneasiness when pupils, less aware of the latest pronouncement of the party, quoted his name with the enthusiasm of 1933.

Not only was the National Socialist Movement unable to create a philosophical synthesis as the basis for its political pedagogics, but it was equally impossible to find a substitute in the cultural lore of the past. This may appear as a paradoxical statement in face of the tendency, which can be found among German leaders in thought and action since the sixteenth century, to emphasize the necessity and the value of strong and even ruthless use of power in the affairs of this world. But it is nevertheless true that this German realism, which was felt as a decisive discrimination between Central and Western Europe on both sides of the borders, had its root in a metaphysical dualism of the spiritual and the secular sphere. This dualism fostered an individualism outside the political sphere, which remained important as a driving power in all cultural productivity. The National Socialist Movement had a strong instinct for the significance of this attitude as a secret source for the will for independence in thought and literature, and its radical extinction was the ultimate claim of the party from its beginning. The type of men, who made the party in all its strata, had no genuine approach to the intellectual tradition of the past, and their old resentment remained a decisive factor in the cultural life of the Third Reich. Not even Nietzsche, whose doctrine of power sounds rather related to Nazi pragmatism, has provided the movement with the philosophy necessary for an educational revolution. Probably some of his formulations had reached young Hitler, and certainly they made the moment of surrender easier for some intellectuals in 1933. But nobody, who knew Nietzsche from his own writings, could overlook the cosmopolitan attitude of the man who was apprehensive of the Prussian victory of 1870-71 because of its effect on German culture, despised the leaders of the anti-semitic propaganda in the 'eighties, and felt himself as a pupil of the French moralists in his psychological analysis. The party has not really tried to patch up this lack of a comprehensive conception, although after

its rise to power many skilful dialecticians would have been only too glad to be allowed to assist in this task. The party stuck to the primitive ideological basis which compilers from compilations, like Rosenberg, had brought together in its early period. The doctrine of the nation as the expression of a uniform racial essence had no foundation in the results of biological and historical research. But on the whole it remained untouched, because it provided an easily understandable basis for the anti-semitism, which is deeply rooted in Hitler's feelings, and was paramount for the party, because it supplied an example, which made the main political notions like 'Herrenrasse' and 'enemy of the State' concrete to the masses of the German people.

The party used to declare emphatically that its educational work is a root of its power in the State. But we may assume that in reality only the very impressive feature of the party's efficiency in organizing national life and its skilful dealing with foreign politics made its educational system tolerable in peace-time. In the first period of Nazi controlled school life it was rather obvious that the appeal of the new order was strongest with the boys up to fifteen. The majority of the older ones began soon to be bored by the permanent repetition of slogans, and became suspicious of the primitive doctrines, which their masters were ordered to present as definite solutions of their problems. My possibility of direct observation was restricted to the initial period, and the character of the school at which I worked made me cautious of generalization. But there are sufficient signs to render it probable that this phenomenon was not restricted in time and place. I suppose that the old leaders of the movement had a clever instinct not to camouflage their ideology. The young German intelligentsia had to be trained in surrendering even to the absurd. The party relied always on the belief in its unconquerable strength. From the beginning its school administration was a piece of a comprehensive power policy. It was just the contrary of what the men, who had started this chapter of twentieth-century educational history, had dreamt of.

THE MEANING OF MUSICIANSHIP: A PROBLEM IN THE TEACHING OF MUSIC.

By JAMES MAINWARING
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- I.—*The problem of aim.*
- II.—*Analogy between musical and linguistic ability.*
- III.—*Musical utterance.*
- IV.—*The reading and writing of music.*
- V.—*The relation of these abilities to musicianship.*
- VI.—*Concluding summary.*

I.—THE PROBLEM OF AIM.

THERE can be few branches of education more in need of definition, clarification and directional guidance than is the teaching of music. The truth of this may be demonstrated by the difficulty of assigning a precise and generally acceptable meaning to the expression 'teaching of music.' It would seem reasonable to assume that the process must either be directed towards the development of some ability or skill or group of abilities or skills which may be regarded as constituting musicianship, or restricted to the development of an appreciation of music. In the former instance the fundamental difficulty is that the elastic and comprehensive applicability of the term 'musicianship' makes its precise definition difficult, and without such definition the teacher of music must embark on a process which is relatively aimless. Even when the process is restricted to the development of an appreciation of music the difficulty is not wholly avoided, for in general the development of musicianship should increase or, at least, should influence the capacity for appreciation. As the writer hopes to discuss in a subsequent paper some of the psychological problems involved in this branch of music teaching, this paper is primarily concerned with the teaching of active musicianship and especially with the analysis of the concept.

Although the acquisition of musicianship implies the possession and development of many different skills, abilities and much knowledge it does not necessarily imply the possession of all these in the same individual. It is difficult in fact to find in all this complex of allied skills and knowledge a residuary common factor or a group of common factors which would be universally accepted as a necessary minimum. There are singers and instrumentalists who sing or 'play' 'by ear,' unable to read a line of music and unacquainted with the most elementary facts of harmony or musical form. There are instrumentalists who are completely dependent on the score or on mechanized recall and who are unable to express a single original thought in music. A musical degree may be obtained without the possession of any executant skills; while diplomas, qualifying the holder as a teacher of music, may be obtained for abilities as varied as elocution, pianoforte accompaniment, voice culture and conducting. For some years the Royal Academy of Music has required most candidates for licentiatehip to take a paper on 'General Musicianship,' which includes questions on the 'Rudiments of Music,' harmony and, in

most cases, musical form. Candidates, with certain exceptions, are also required to pass a number of aural tests. This praiseworthy attempt to establish some common factor has to differentiate between general musicianship from the point of view of instrumental study and general musicianship from the point of view of vocal study, while composers, conductors and elocutionists, obviously for widely different reasons, are not required to take the paper.

The problem of aim is most difficult for the teacher of music in schools, for it is less specific than that of the independent professional music teacher, whose work is usually restricted to the development of some executant skill with sufficient elementary musical knowledge to meet the graduated requirements of the various examining bodies. Urged by the Board of Education to develop an appreciation of music, expected by the school authorities to produce some singing, perhaps a choir, even a concert—often with inadequate equipment—faced with classes of thirty or more children, non-selected musically, some with breaking voices, some tonally deaf, and given one or perhaps two weekly 'periods' to accomplish his miracles, the average master or mistress responsible for this Cinderella of school subjects may well wonder where to begin, what to do and how to do it.

II.—**ANALOGY BETWEEN MUSICAL AND LINGUISTIC ABILITY.**

The first step towards the clarification of the process of music teaching is clearly the analysis of musical ability itself, and by comparing musicianship with the better understood linguistic ability much of this analysis can be achieved. As all language can only be spoken or written, heard or read, so music can only be 'performed' or written, heard or read. Both abilities, therefore, are restricted to three groups of similar abilities : firstly, the ability to speak the language, to utter the pre-determined sounds with understanding ; secondly, the ability to understand and use the written symbols ; and, thirdly, to have a developed appreciation of the literary or musical values. The analogy may be more clearly expressed and its sub-divisions made more apparent by graphic or tabular representation

Obviously the analogy must not be pressed too closely, but there are sufficient elements common to the two abilities, or groups of abilities, to make it possible to apply the generally known facts of the one to the analysis of the lesser known, and to its development. An example of this may precede further analysis. The ability to speak and to understand one's own language naturally precedes the acquisition of the ability to read and write it. The long and laborious acquisition of the vocal skills involved in speech and the co-ordination of these various skills for the purpose of intelligible utterance have become mechanized and habitual in the child long before he learns to associate sounds, and the unconscious processes involved in their utterance, with written symbols. First the letter, then later the word or group of words, have an immediate meaning to the reader. They are never regarded as the stimuli of some vocal performance which, on completion, achieves the utterance of some probably unexpected sounds. Yet a musical education frequently begins by being directed towards the achievement of this curiously inverted result. Instead of learning first how to produce, preferably on some simple instrument or /and on a piano, the sounds he wishes to produce or a given sound, instead of learning first to speak, and later being taught to associate a symbol with the sound he can immediately and unconsciously reproduce, the child is taught to associate the symbol with an activity, such as the depression of a particular key, and not with the resultant sound. There are

TABLE I.—LINGUISTIC ABILITY.

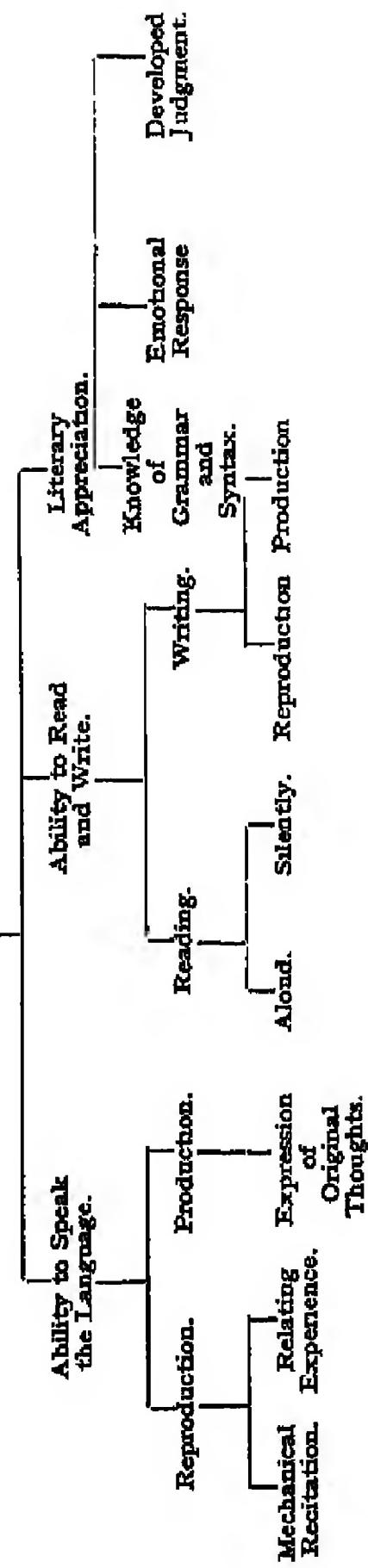
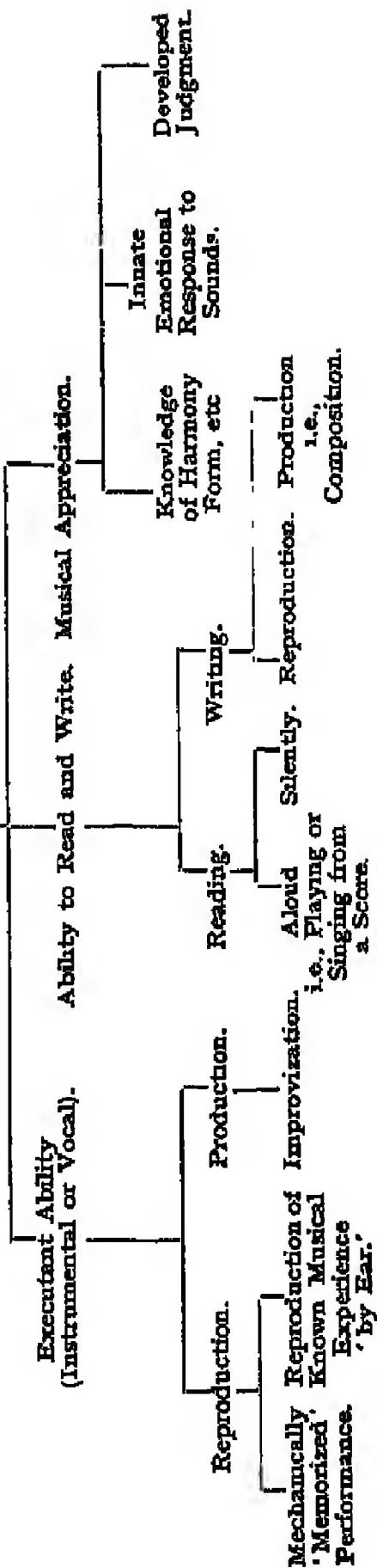


TABLE II.—MUSICAL ABILITY.



many quite skilled executants to whom a music score is meaningless until they have 'played it.' It is as though a page of print were meaningless until it has been read aloud. The correct sequence of events, which should follow so immediately as to seem synchronous, should be :

- (1) Recognition of symbol.
- (2) Mental sound.
- (3) Mechanized response.
- (4) Expected sound.

The actual sequence in the usual teaching process is :

- (1) Recognition of symbol.
- (2) Mechanized response.
- (3) Unexpected sound.

It is mainly for this reason that so many executant musicians are musically 'dumb' without their music.' It would, however, be unjust to regard it as the only reason. The ability to hear mentally a specific and recognizable sound, or to retain mentally such a sound, cannot be regarded as equally and universally innate or acquirable. That the fundamental ability which has to be developed is, however, more general than one would suppose from the lack of its general development may be simply demonstrated in any group of children or adults. A note within vocal range is first sounded, and the group has been instructed simply to listen to it. The subjects are then asked to think of the sound they have heard. They are then asked to sing it. It is the writer's experience that most of them usually can do so. In those who succeed, the process of vocal utterance has already become mechanized in relation to an expected sound, in this case a pre-determined sound, a given sound, and one which had to be 'remembered' for a few seconds. It is but an extension of this ability to relate the mental 'image' to a symbol and to an 'instrumental' instead of a 'vocal' activity.

An important factor in this simple experiment is that the subjects have to wait for a few seconds before they are asked to reproduce the note. The reason for this is that the capacity vocally to reproduce a given sound immediately it is heard is rapidly acquired without the necessity of any intervening auditory image. Unlike a word, which can be remembered after an interval, a note has no meaning and, in this experiment, no relevant attribute other than its pitch. The child, unless specially trained, cannot remember the note by its name, as an experienced musician could do, so that, in order to reproduce the sound after an interval, he must 'remember' the pitch of the note. In order to eliminate the only alternative possibility, that the reproduction is due to kinesthesia, in the form of a retained sub-vocalization of the sound, the experiment was slightly modified. A number of adult subjects were separately asked to listen to a given sound, to count from one to three aloud, and then to reproduce the sound. All but one succeeded, and their introspections, for which they were afterwards asked, varied little from "I had to think of the note you had sung."

To be able to 'think in sounds,' to recall by imagery sounds and the pitch of sounds, is, in the opinion of the writer, of fundamental importance in the development of musicianship. As the immediate reproduction of a given sound, a sound actually heard, soon ceases vocally and instrumentally to be dependent on this form of auditory imagery, its value sometimes tends to be obscured. But to be able to play a recalled tune (as different

from the mechanical performance of music learned by repetition), to improvize, to compose, and to enjoy a music score by silent reading, necessarily imply the developed capacity to 'think in terms of music'. It is for this reason that the psychological events which occur during the process of reading music in the early stages of a musical education should follow the order previously suggested.

III.—MUSICAL UTTERANCE.

Ability to speak is acquired so early in life that the laborious efforts involved in the formation of the relevant kinæsthetic habits are rarely if ever consciously recalled. The child soon begins to associate sounds with specific things or events but the acquisition of the skills involved in the utterance of the sounds is a distinct and slower process. At length the meaning or the thought is sufficient to evoke the immediate utterance of the word without conscious effort. There is still a long step from this ability to that of joining words into sentences capable of expressing a desire, a question or an idea. In the actual expression of music by means of an instrument the acquisition of the requisite skills should follow a similar sequential development. The ability to produce a desired sound by the manipulation of the instrument should be the first aim. The ability to reproduce immediately any desired sound may be regarded as the musical equivalent to the ability to utter immediately any desired word. The derived ability to reproduce immediately a melodic passage may be similarly regarded as the musical equivalent to the ability to express a thought intelligibly in words.

This skill may be used in three different ways, two of which may be termed reproductive and one productive. Firstly, it may be used for mechanized repetition as in a recitation. Such a process is a mechanized motor habit sequence in which each kinæsthetic element in the series serves to stimulate the occurrence of the next. Much so-called memorization of music is necessarily dependent on this kinæsthetic tendency.¹ Undesirable as the tendency may sometimes be, as, for example, when one 'has a tune on the brain,' which tune, once stimulated, persists even against desire in traversing and retraversing its mechanized path, the tendency is invaluable in the 'memorization' of long instrumental works. To play accurately and rapidly passages of technical difficulty is equally dependent on the formation of such a kinæsthetic habit sequence by the frequent and careful repetition of the work or musical fragment. Invaluable as is this kinæsthetic process both in the acquisition of necessary skills and in the memorization of long works, developed kinæsthetic ability alone can no more be regarded as evidence of musicianship than the mechanized repetition of a hundred lines of the *Aeneid* could be regarded as evidence of classical scholarship.

This ability to recite, or to memorize by repetition, implies only the ability to utter or produce the requisite sounds; it does not in itself necessarily imply any ability to speak the language. The second sub-division of this class of linguistic ability does imply this, although it is still essentially reproductive utterance. It is the ability to re-tell something heard, or to relate an experience. The musical counterpart is the ability to re-express some musical fragment that has been heard, as, for example, the ability to play 'Annie Laurie' on a piano by the process curiously known as 'playing by ear.' Just as the speech may vary from a crude and ungrammatical expression to one of polished

¹ See the writer's "Kinæsthetic Factors in the Recall of Musical Experience."—*Brit. Journ. of Psychol.*, XXIII (3).

fluency, or from vulgar extravagance to restrained oratory, so the musical reproduction may vary from a clumsy and hardly recognizable expression to a skilled or artistic interpretation. Anyone unable to read, and dependent, therefore, on recollected audible fragments for any acquaintance with the works of literature or music, could achieve only a very restricted linguistic or musical expression, and while such expression may be sincere and delightful, it must inevitably be simple and almost certainly would be crude. Yet the ability to produce immediately pre-determined sounds is the basis of all musicianship, for it is simply the ability to speak the language of music, the ability to reproduce the sounds mentally recalled. The ability to 'play by ear,' so frequently derided by the ignorant as some inferior form of musicianship, is, in fact, more genuinely a criterion of real musicianship than is a highly developed executant skill dependent on the mechanized reproduction of a complex series of manipulatory processes.

The third use of this kinæsthetic ability to express immediately in words or music the thought which stimulates the expression is that in which the thought is an original one. The wealth of the world's folk-songs is an expression of spontaneous and original musical utterance which demanded no more than an ability to sing and a joy in creation. Not all the whistled fragments of care-free youth are tunes recalled. Given a simple instrument such as a recorder, a dulcimer, or Montessori bells, the child with the appropriate type of imagination, once he can produce immediately a required sound, soon begins to experiment in the production of what are, to him, new tunes.

Skilled pianoforte or organ improvisation represents the ability in its most complex form, for it implies the spontaneous and apparently synchronous expression of a complete harmonic structure, the control of modulation, the retention of some formal design and unity, and an immediate kinæsthetic responsiveness in the weaving of melodic and rhythmic patterns to the mind's dictates. Fundamentally, the process, in speech and in music, depends on two abilities: one must have something to say, and be able to say it. The former ability depends on many factors, including an imaginative creativeness, one's sense of values, and the quality and degree of relevant knowledge and experience. The second ability is dependent on a group of acquired kinæsthetic skills, and its development, therefore, should be one of the fundamental aims of musical education.

IV.—THE READING AND WRITING OF MUSIC.

It is possible now to assign to a practised familiarity with the symbols of music a correct place in musicianship. The most obvious value of an ability to read, whether in the literary or musical world, is that one is thereby freed from dependence on hearsay, on the interpretation of an intermediary, and able to make direct, personal and independent contact with the work through the medium of the script. Apart from the joy of such personal contact there is the greater joy of having the inexhaustible wealth of the world's music directly available for exploration. Without the enrichment afforded by such experience there can be but a very restricted and dependent degree of musicianship.

The literary analogy, however, suggests that the ability to read should be superimposed on the ability to speak the language. The fact that even young children are expected to be able to read silently implies the general belief that the literary symbols should be immediately intelligible without the intermediate necessity of pronouncing the words, even 'sub-vocally.' Yet the ability to read silently the music represented by the printed symbols or the ability to write music without reference to an instrument

is relatively rare. The score means little or nothing until the sounds represented have actually been produced, that is, until it has been 'read aloud.' The extent to which the ability has to be developed in serious musicianship may be shown by recalling that an orchestral or choral work has to be completed before it can be heard at all.¹

The point is of great importance in musical education, as the reason for the general failure of young musicians to have developed so valuable a skill is the unfortunate tendency to teach the notation as the stimulus of an activity rather than as symbolic of sounds. This is particularly true of the symbols of pitch. Whereas the symbols of 'time' or of rhythms represent only relative values, so that the time values represented by a group of such symbols may differ rather as 'similar' triangles may differ, the symbols of pitch should represent absolute sounds. It is true that a melody which preserves the same relative pitch and time values will be recognized as the same melody irrespective of the absolute pitch values, as the National Anthem, for example, is recognizable as such in any 'key' in which it may be played; and the 'Tonic-Sol-Fah' system of relative pitch notation is based on this fact. The symbols used in staff notation, however, as employed in all instrumental music, are intended to represent actual named sounds, not relative pitch values, and unless they do, in fact, evoke a mental image of a specific sound of recognizable pitch, the correct sequence of psychological events in reading or writing music is impossible.

The difficulty experienced by teachers of pianoforte playing, anxious to achieve this result, is that pianos are unfortunately not tuned exactly to the same standard pitch, though the degree of variation seems now to be less than it used to be. The writer's experience has shown, however, that if children are restricted to the use of a single piano or to pianos of identical pitch, many can be taught rapidly to recognize and name sounds, the ability curiously known as 'having absolute pitch,' and can be taught to read music in this way. They rapidly tend to associate a specific quality to a specific 'key' or 'note,' and to recognize it in the same spontaneous and immediate way as that in which colours are recognized. This tendency, incidentally, has no relation to the view that certain 'keys' and certain colours have something in common, though the curious tendency to associate certain keys with certain colours does seem to occur in the experience of some musicians.

A curious characteristic of this ability to know a musical sound by its name is that the tendency to think of notes and keys by their names seems to persist irrespective of the extent to which long experience of the varied pitches of different instruments may have dulled the accuracy and precision of absolute pitch judgment. It is similar to the fact that green always remains green irrespective of the vast majority of its shades and its tendency to merge into blue, at one extremity, and into yellow at the other. In musical composition each mentally conceived sound is known and written, just as in literary composition each word or letter is written, as the direct symbol of the sound—or meaning—intended. It is the specific sound which occurs in the mind, not the fact that it is a major

¹ It may be objected that the reading of words and the reading of music are not strictly analogous as it is not the sound of the word but its meaning which is mentally evoked by the printed symbol. In the early stages of learning to read, however, the printed word represents, first, the known and spoken word. It is later and derivatively that the printed word is directly intelligible and that the spoken word is short-circuited. Moreover, in the silent reading of poetry full appreciation implies that some attention is given to the sounds of the words used. Rhyme, metre, onomatopæia, and other literary devices of this kind, would otherwise be valueless except in the audible reading of poetry.

third or diminished fifth higher or lower than the preceding sound, or that it is the mediant or some other degree, of the key in which one happens, apparently from arbitrary choice, to be writing.

To two uses of the ability to write music in this way reference may be made. In the preceding section brief mention was made of improvisation, which may be defined as the immediate expression of some spontaneous musical thought. It resembles the first rapid sketch of the artist, or the 'inspired germ' from which the poem is to be carefully elaborated. Of this 'inspired germ' Brahms has written : " That which you would call invention, that is to say, a thought, an idea, is simply an inspiration from above, for which I am not responsible, which is no merit of mine. Yet it is a present, a gift, which I ought even to despise until I have made it my own by right of hard work."¹ The ability to write not only enables the composer to capture and perpetuate this elusive and inspired fragment, as Beethoven filled his note books with tiny jottings later to be developed into his immortal works, but it also provides the opportunity for the careful craftsmanship implied in the ultimate composition, to the labour of which Brahms refers.

In the teaching of the visual arts children are no longer restricted to the drawing of cubes and pyramids or to the copying of casts and designs, but are encouraged to draw and to model from their own imagination, to learn the use of the medium through the process of controlled creation. School magazines afford ample evidence of the tendency to use the same 'joy in the making' in the 'teaching of poetry.' That the same use of the creative interest is not equally and generally sought in the development of musicianship is not due, according to my experience, to the inability of children to create melodies and rhythmic patterns, to make music for themselves. Rather it would appear to be due to the badly developed capacity to write easily the fragments they can create, and to their general inability to express their musical ideas through any medium but the voice. It matters little that early creative efforts may be crude and musically 'illiterate.' Musical education usually begins so late that the laborious efforts involved in the mechanization of the kinæsthetic processes on which spontaneous musical utterance depends occur at the time when the child should be already using these processes. The effort repels him, becomes burdensome, and sterilizes his musical expression. Musical education should begin in infancy.

V.—THE RELATION OF THESE ABILITIES TO MUSICIANSHIP.

The abilities so far analysed and inter-related, while they may be regarded as the fundamental elements in musicianship, do not in themselves constitute more than this elementary basis. The ability to speak and to talk, the ability to write and to read, aloud and silently, would never be regarded as constituting literary ability, and are, in fact, no more than the elementary skills through which literary ability has to be expressed and developed. The difference between the possession of the skills and the right to claim the possession of literary ability is not one of degree, a quantitative difference only, for no degree of skill in any or all of these abilities could justify such a claim. Yet ability in less than all of these elementary skills is generally regarded in itself as constituting musicianship. The point may be clearly demonstrated by comparing the concepts 'Poet' and 'Musician.' No one would regard a reader of poetry, however brilliant his interpretative

¹ Quoted in SCHOLES' *The Listener's Guide to Music*, p. 18, from Sir George Henschel's *Musings and Memories of a Musician*.

prowess, as being, therefore, a poet ; why, then, is executive interpretative ability in itself generally accepted as a criterion of musicianship ?

The answer to this question is not to be found in the existence of any fundamental difference between the arts of poetry and music. Both are dependent in their respective ways on the imaginative and creative use of sound and both are therefore dependent for the appreciation of their beauty on being heard, either actually through audible expression or mentally through imagined expression. But whereas the ability to read a poem, and in the process to extract at least some meaning from it, is relatively general, music, like the Egyptian hieroglyphics of old, is far more dependent on the executant ability of an interpreting intermediary or of a group of such. If the analogy so far employed were absolutely true it would be logically possible to say that the musical executant bears the same relationship to music as would a reader to a written passage in an illiterate world. This is not true, however, even if the analogy be restricted to music and poetry, for the meaning and value of a poem are not wholly dependent on sound, whereas the æsthetic value of music is so dependent.

Much of the joy of poetry lies in the beauty of the thought expressed. That it does not lie only in the beauty of the sounds is obvious from the fact that a poem in an unknown tongue would lose most of its value, and be little more interesting than a rhythmic jingle of nonsense-syllables. The visual arts, whether expressed through the medium of marble, pigment or line, present the achievements of the artist directly to the contemplator. Both poetry and the visual arts, therefore, demand no intermediary interpreters, and whatever knowledge, experience, taste, skills and abilities are implied in their æsthetic valuation, these are assumed to exist in the reader or contemplator himself. Sound has not the enduring quality of pigment, nor has the printed musical symbol the same precision of meaning as has the written word. Exact recordings of vocal and instrumental performances made in the psychological laboratories at Iowa and in the Peabody Conservatoire have revealed the great divergence which exists between the interpretations of the same score by different executant 'artists,' the lack of consistency between successive performances of the same work by the same artist, and the extent to which the score is regarded, in the words of Professor Carl E. Seashore, as but a 'schematic reference' about which the performer weaves his own interpretative rendering.¹ It is clear, therefore, why so great an importance should be given to executant skill in the musical world.

It has already been emphasized that the ability to read music should be superimposed on the ability to produce instrumentally the required sounds—the ability to 'speak.' It is merely a development of this contention to say that the desirable ability to reproduce mentally the sounds symbolized in the score derives great assistance from relevant executant experience. The kinæsthetic habits acquired in the process of developing musical 'utterance' themselves come to the aid of the silent reader, who 'feels' the harmony, the chord and the arpeggio, in his fingers, as the organist 'feels' the pedal note with his feet.² An orchestral score conveys far more to the experienced conductor than it could ever do to the inexperienced theorist. Actually, such a reader is performing the first two of the events in the correct series of events which occur in playing 'from sight' ; the

¹ See especially Vol. IV of the *Iowa Studies in the Psychology of Music*, 1937, and SEASHORE'S *Psychology of Music*, 1938.

² See the writer's "Kinæsthetic Factors in the Recall of Musical Experience."—*Brit. Jour. of Psychology*, XXIII (3).

mental sound is assisted by the kinæsthetic 'image' as, if he were actually playing, it would be produced without conscious effort by the kinæsthetic act.

In any complete musical experience there may be distinguished three agents: the composer, represented by his symbolically recorded creation, the executant interpreter or interpreters, and the listener. While these three elements do not represent mutually exclusive activities, for they may be represented in the same individual, as in a composer enjoying his own playing of his own composition, they are not necessarily co-extensive. It is because each one of these aspects of musicianship may be specifically developed that the common basis of musicianship tends to be obscured. The critical and appreciative listener may be a poor executant and have created nothing. Similarly, musical executant ability may be highly developed, and often is, simply as a complex mechanistic skill, achieving what a machine could achieve and actually what a machine can reproduce. It is certain that music must mean much more to the listener who has some executant skill, who can speak the language of music, and whose ability to 'think in terms of music' can bring him into intimate relation with the work to which he is listening. Similarly, the responsibility of interpreting the works of music demands more of the executant than mere kinæsthetic brilliance. True musical executant ability demands, firstly, the ability to produce immediately and spontaneously the mentally imaged sound, whether this be recalled, spontaneously conceived, or stimulated by the visible symbol. If on to this is grafted requisite and adequate knowledge and experience, and if there should develop with this experience a love of music, then the basis of musicianship has been well and truly laid. If to this equipment there be added the gift of a musically creative imagination, the gulf between the executant musician and the composer is bridged, and the further conception of musicianship becomes a matter of degree.

VI.—CONCLUDING SUMMARY.

With the object of giving more precision to the aim and process of musical education, this short paper expresses an attempt to analyse the elastic concept of musicianship. The main conclusions reached are:

- (1) That, as it is possible to distinguish three elements in musical experience, namely, the music, the executant interpreter and the listener, so there are three aspects of musicianship capable each of specific development, the art of composition, an executant skill, and a critical and appreciative judgment.
- (2) That any such specialization should be based on a training in general musicianship, which comprehends all three aspects of it.
- (3) That the basic skill in general musicianship is the ability immediately to reproduce on a suitable instrument a given or pre-determined sound; the ability to 'speak the language of music.'
- (4) That the ability to read music should be superimposed on this ability, so that the actual sequence of events, apparently synchronous, should be recognition of symbol, image of sound represented, kinæsthetic manipulatory reaction, production of expected sound.
- (5) That from this basis only may musicianship be fully and rationally developed.

AN INVESTIGATION INTO SOME ASPECTS OF PROBLEM SOLVING IN ARITHMETIC.*

BY JOHN SUTHERLAND
(Moray House, University of Edinburgh)

PART I.

- I.—*Previous investigations.*
- II.—*The object of the investigation.*
- III.—*The tests used in the investigation.*
- IV.—*Subjects of the tests and administration.*

I.—PREVIOUS INVESTIGATIONS IN THIS FIELD.

DURING the past fifteen years there have been conducted in America a number of investigations relating to problem solving in arithmetic. The first studies concerned themselves largely with the elimination of obsolete problems and the attempt to make verbal problems more practical. Since that time several studies have concerned themselves with the question of how pupils solve reasoning problems.

The arithmetic problem, however, does not readily lend itself to critical study. It is difficult to isolate the factors which constitute the material and procedure of children's mental processes in problems solution. The steps in computation and the errors children make give evidence of the trail of their thinking in mechanical work, but we find it difficult to improve their arithmetic reasoning because we are not aware of their habitual ways of thinking in dealing with problems. Most people are totally unaware of the extreme difficulty which arithmetic presents to children. We know almost nothing of the psychology of the arithmetic problem other than that children often make an unexpected and seemingly unreasonable choice in the selection of principle notwithstanding persistent practice.

Certain studies have been made pointing out some of the factors which influence problem solving.

In 1924 F. A. Butler¹, of the University of Wisconsin, in an unpublished thesis, attempted to determine four fundamental factors that "influence the interpretation of concrete problems," viz.:

- (1) The ease with which the objective setting may be visualized.
- (2) The size of the numbers in the problem.
- (3) The familiarity of the terms used.
- (4) The sequence of like problems.

No mention is made of the relative importance of the four.

* The main part of a thesis submitted in 1940 in part fulfilment of the requirements for the degree of Bachelor of Education, University of Edinburgh

¹ Referred to by L. L. Hyde and F. L. Clapp in "Elements of Difficulty in the Interpretation of Concrete Problems in Arithmetic."—*Univ. of Wisconsin Bureau of Educational Research, Bulletin 9*, 1927.

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Hydle and Clapp,¹ in 1927, carried the matter farther and attempted to study eight elements of difficulty. They still used for their tests the old text-book type of problems.

O. S. Lutes,² of Iowa University, believes that practice in computation is a most effective means of improving results in written problems, but W. H. Winch³ believes that there is no transfer from practice in computation to ability to solve reasoning problems. In a study of this aspect of the problem B. A. Stevens,⁴ in 1932, deduced that ability in the fundamental operations of arithmetic is much more closely correlated with reasoning ability than is general reading ability. Unfortunately, however, the tests of problem solving ability which were used (and almost any other tests which could be used) give a measure which depends on the number of problems correctly solved. Since this involves computational ability, there is bound to be a high correlation between the two.

In 1927 Washburne⁵ found "that pupils' inability to carry over a process they know to a problem requiring written work is a frequent cause of difficulty, even when the pupils can do a similar problem involving small numbers." This difficulty, he finds, is most evident in the lower classes where the processes have just been learned, and tends to disappear as the processes become more fully automatic.

Washburne and Morphett,⁶ in 1928, reported a study they made of the effect of unfamiliar situations as a factor in problem solving. (They gave a test made up of eight pairs of problems at fifth-grade level. The problems were alike in all respects save that of the situation involved.) The results showed no significant difference between the scores obtained in the problems in which the situation was familiar to the children and those in which the situation was unfamiliar to the children. The study was weak in that the authors relied on the judgment of adults as to the familiarity or unfamiliarity of the situation.

In 1938 Grace A. Kramer⁷ studied four factors in order to determine their effect on children's success in problem solving but found that only the factor of unfamiliar vocabulary made any appreciable difference. Helen M. White⁸ (in a Master's thesis in 1932) concludes that "where the problem is a very easy one for the child the amount of experience which he may have had in the situation involved in the problem does not appear to be a large factor in the selection of the right process or in the achievement of the right answer. In problems other than the very easy ones, the matter of experience in the situation involved in the problem is a highly significant factor in the selection of the right process and in the achievement of the right answer."

It seems therefore that the following factors influence problem solving in arithmetic:

- (a) From the point of view of the problem—
 - (1) The vocabulary of the problem; (2) The mechanical arithmetic involved;
 - (3) The problem situation.
- (b) From the point of view of the child—
 - (1) Intelligence; (2) Ability in silent reading; (3) Power of comprehension;
 - (4) Power in the fundamental operations of arithmetic

¹ HYDLE and CLAPP.—Op. Cit.

² L. S. BRUECKNER. *Diagnostic and Remedial Teaching in Arithmetic*, p. 309. (John E. Winston Company, Philadelphia, 1930)

³ W. H. WINCH. "Further Work on Numerical Accuracy in School Children."—*Journal of Ed. Psych.*, 2 : pp. 262-271, March, 1911.

⁴ B. A. STEVENS. "Problem Solving in Arithmetic."—*Journal of Educational Research*, 25 : pp. 253-280.

⁵ C. W. WASHBURNE. *Elementary School Journal*, 27 : pp. 758-767, June, 1927

⁶ C. W. WASHBURNE and MABEL V. MORPHEWTT. "Unfamiliar Situations as a Difficulty in Solving Arithmetic Problems."—*Journal of Ed. Research*, 18 : p. 224, October, 1928.

⁷ GRACE A. KRAMER: *The Effect of Certain Factors in the Verbal Arithmetic Problem upon Children's Success in the Solution*. (Johns Hopkins Press, Baltimore, 1933.)

⁸ HELEN M. WHITE. "The Relation of an Understanding of the Situation Involved in a Problem and Success in its Solution."—*Master's Thesis*, Boston University, 1932. Quoted in *Teaching the New Arithmetic*, by Wilson Stone and Dalrymple. (McGraw Hill Book Company, Inc., New York and London.)

II—THE OBJECT OF THE INVESTIGATION.

The scope of the present investigation was narrowed to include only two main objects:

- (a) To find the effect of familiarity of the situation on pupils' ability to solve arithmetic problems.

A familiar situation is one in which the child has a considerable chance of finding himself. The problem is stated in terms of articles and situations that come within the child's experience.

An unfamiliar situation is one in which it is very unlikely that the child has ever found himself. The problem is stated in terms of articles and situations which it would be unreasonable to suppose would come within the normal child's experience.

A preliminary experiment was carried out with tests involving no arithmetical calculation to find out whether or not the one set of situations was familiar to the child while the other set was not.

- (b) To find what abilities are involved in the solution of an arithmetic problem by factorial analysis.

III.—THE TESTS USED IN THE INVESTIGATION

TABLE I—TESTS USED IN THE INVESTIGATION.

<i>Group.</i>	<i>No.</i>	<i>Name of Test</i>	<i>No of Items</i>	<i>Time Allowed.</i>
A.	1	A Group Intelligence Test..... (Moray House Intelligence Test, No 27)	100	45 mins
B	2	A Visual Perception Test..... (Spearman) (High "g" Saturation)	80	19 mins
	3	Stephenson G-Test No. 1. (High "g" Saturation.)	186*	25 mins.
C	4	Opposites	15	8 mins.
	5	Analogies	25	10 mins
	6	Reasoning	40	25 mins.
	7	Number Series	40	20 mins
		Letter Series and Code Sums	40	20 mins.
D.	8	Spelling (Skeleton Word)	40	20 mins
	9	Vocabulary.....	40	20 mins
	10	Interpretation	40	20 mins
E.	11	Arithmetic Fundamentals .....(First Section of Moray House Arithmetic Test, No. 11.)	42	15 mins.
F	12	Arithmetic Problems .....(Familiar Situations.)	40	35 mins.
	13	Arithmetic Problems .....(Unfamiliar Situations.)	40	35 mins.

*See full description of test which follows.

A1—*The Group Intelligence Test* chosen—Moray House Group Intelligence Test, No. 27—has been standardized on 10,000 children, and is designed to give maximum discrimination at the age of 11+. For a normal group it should give:

$$\text{Mean I.Q.} = 100. \quad \sigma \text{I.Q.} = 15.$$

B2.—*Spearman's Visual Perception Test*. This test, obtained from Professor Spearman, makes use of geometrical forms instead of words (presenting essentially similar types of test in this medium). Thus analogies tests (cf. C4) or series tests (cf. C6, 7) are used, with the analogy in terms of forms such as triangles or squares, or various other patterns, instead of in terms of words or numbers.

The test has been used and described by Holzinger and Swineford,¹ Stephenson,² Brown and Stephenson,³ and Alexander⁴ have also used it on various researches. Alexander uses the test as a measure of 'g' and nothing else, but this assumption has hardly been borne out by other workers in the field and as yet there is no evidence that these 'g' tests measure only one unitary common factor.

On the suggestion of Professor Spearman, a new method of indicating which of the drawings on the right should be used was tried. In each case there were four choices, and these were lettered A, B, C, D. Each pupil was then given the usual test form, and a cyclostyled sheet with four columns of 16, 16, 16 and 12 sets of the four letters A, B, C, D. Instead of underlining the drawing on the test form, the pupil was asked to indicate the drawing he would choose by underlining the appropriate letter on this cyclostyled sheet. In this way the original forms of the test, which are rather difficult to print, can be preserved and used again.

The objection to the method is that it makes the test much more difficult, and introduces factors not previously included in the test performance. The child has to decide which drawing he would underline, look for the letter above it, look at the cyclostyled sheet, make sure he is looking at the correct column and line, and then underline the appropriate letter. As well as introducing additional factors, this makes the time-limit very severe.

In its original form the test consisted of eight sections, and required a total administration time of nearly an hour and a half, of which forty-six minutes was actual testing time. The test in this form was used in two sections by Holzinger and Swineford⁵ in some of their earlier work.

An item analysis provided validity and difficulty ratings, on the basis of which they arranged the test in its present form. It was then used to test two groups from Grades VII and VIII (i.e., about thirteen or fourteen years old), when the following factor analysis was obtained in the two cases:

- (a) .585 general + .400 spatial + .513 specific + .484 unreliability.
- (b) .589 general + .325 spatial + .551 specific + .494 unreliability; or
.589 general + .447 spatial + .457 specific + .494 unreliability.

The two results in (b) were obtained by two different methods of calculation.

The test has also been used by Stephenson and Brown and Stephenson. Stephenson used verbal sub-tests along with non-verbal sub-tests in a very detailed tetrad analysis. He found that the tetrad differences in the verbal and non-verbal groups of tests matched with some exactness the values to be expected from sampling error. But the tetrad differences involving both verbal and non-verbal tests gave a higher residual error, indicating another factor. Closer examination revealed it to be in the verbal tests. Basing further work with non-verbal tests on this finding, Stephenson and Spearman set up a measure of 'g' which they claim has a remarkably high correlation with 'g.' The test used is one of these measures.

¹ K. J. HOLZINGER and F. SWINEFORD. "The Stability of a Bi-factor Solution."—*Supplementary Educational Monographs*. (The University of Chicago, No. 48, March, 1939.)

² W. STEPHENSON. *J. Educ. Psychol.*, 1931, XXII.

³ W. BROWN and W. STEPHENSON: *Brit. Journ. Psych.*, XXIII, Part IV.

⁴ W. P. ALEXANDER. "Intelligence, Concrete and Abstract."—*Brit. Journ. Psych. Monograph Supplements*.

⁵ HOLZINGER and SWINEFORD. Op. Cit.

Alexander¹ also used the test in testing Group III (108 boys in a technical high school in Chicago) and Group IV (100 delinquent women) in the course of his study of differential traits in intelligence. In his monograph Alexander refers to the test as the Spearman-Stephenson Perceptual Test, and says that it is put forward by its authors as a measure of pure 'g.' The evidence for this claim he holds is to be found in the work of Stephenson and Brown and Stephenson referred to above. In his subsequent work Alexander assumes that this claim is justified, and uses the test as a measure of 'g' and nothing else. This assumption, however, has hardly been borne out by other workers in the field (c.f. the analysis obtained by Holzinger and Swineford) and as yet there is no evidence that these 'g' tests contain only one unitary common factor.

B3.—Stephenson's 'G' Test, No. 1. This is a recent test constructed by W. Stephenson.² It is said to have a high 'g' saturation. No detailed factor analysis of the test, however, is available. It consists of thirty-one groups of items of the following type:

DIRECTIONS.

Look at Lists 1 and 2—

1.	2.	A.
C A K E .	send.	lend
S A K E .	bend.	wend
M A K E .	mend.	L A K E
		tend
		T A K E
(Answer on the dotted lines above.)		

The words in List 1 are alike in a certain way; those in List 2 are also alike, but in a different way. Some of the words at the right (under A) belong to List 1, and some to List 2. Find the words in List A that belong to List 1, and also those belonging to List 2. Put a '1' on the dotted line to show which belongs to 1, and a '2' to show which belongs to 2.

The examiner makes sure that the instructions are followed, but in no case gives any help in solving.

On page 2 twelve items are included in Group A, four belong to Group 1, four belong to Group 2, and four to neither group. The spaces opposite the four belonging to neither group should be left blank. This method is then followed throughout the rest of the test.

Having been shown exactly what to do while working through the first two pages of the test (five groups of items) the pupils are given twenty minutes to do as much as possible of the rest of the test.

Though the group quoted above uses words, most of the groups do not; but shapes and drawings are used instead of words and letters.

A choice of methods of marking is provided but the method recommended by Stephenson was adopted. Each 'one' correct is marked, each 'two' correct is marked, and the rest is neglected. The scoring formula is best tabulated as follows:

TABLE II.

4 4 6	4 3 6	4 2 3	4 1 3	4 0 3
3 4 5	3 3 3	3 2 1	3 1 1	3 0 1
2 4 3	2 3 1	2 2	2 1	2 0
1 4 3	1 3 1	1 2	1 1	1 0
0 4 3	0 3 1	0 2	0 1	0 0

¹ W. P. ALEXANDER: "Intelligence, Concrete and Abstract."—*Brit. Journ. Psych., Monograph Supplements*.

² Copies of the test can be obtained from Dr. Stephenson at the Institute of Experimental Psychology, Oxford University.

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The number of 'ones' correct is indicated first, the number of 'twos' correct second and the score is shown in italics.

C4, 5, 6, 7.—The items for the tests in this group were taken from Moray House Intelligence Tests 28, 29 and 30, with the exception of the items for the Number and Letter Series Tests, which were partly taken from these intelligence tests and partly constructed at the time. The type of item used can be seen from the following examples taken from the Analogies Test and the Number Series Test.

(1) Motor bus is to road as train is to (carriage/engine/railway/petrol/speed/steam).
The correct answer in the brackets should be underlined.

(2) 5, 6, 8, 11, 15 ().
The next number in the series should be placed in the brackets at the end of the line.

Answer patterns were available for all the items taken from the intelligence tests and were used to arrange them in order of difficulty.

D8, 9, 10.—All the items for the tests in this group were taken from Moray House English Tests 11 and 12, and the answer patterns were again used to arrange the items in order of difficulty. The following example is taken from the Vocabulary Test.

This school has EXTENSIVE playing fields (expensive/large/extra/distant/magnificent/outside). The word in the brackets which means most nearly the same as extensive should be underlined.

All the tests in Groups C and D presented questions which could be answered by underlining a word or inserting a figure. Only those items which had proved reliable under test conditions were used.

E11.—For this test the first section of Moray House Arithmetic Test 11 was used. It consisted of forty-two sums involving the use of the four fundamental processes together with a knowledge of the principal tables.

F12 and 13.—These two tests were specially constructed for the experiment. Each consisted of forty little problems most of which could be worked out mentally. To each question in Test 12 there corresponded a question in Test 13, alike in every respect except the setting or the background. A few examples will illustrate this point.

	<i>Test 12.—Familiar Situations.</i>		<i>Test 13.—Unfamiliar Situations.</i>
8	There were 48 pupils in a class. 10 pupils left and 5 new pupils came into the class. How many were in the class then? (. . . pupils.)	8	A merchant had 94 tons of raw linseed oil in stock. He sold 8 tons and bought in 5 tons. How much had he? (. . . tons.)
16	I bought 4 dozen pencils at 1½d. each. What is the cost? (. . .)	16	Capsules of a certain chemical cost 1½d. each. What is the cost of 3 dozen of these capsules? ()
36	If each square in a ½lb. block weighs ½-oz. how many squares are there? (. . . squares)	36	If a cubic inch of mercury weighs ½-oz. how many cubic inches are in 1-lb. of mercury? (cubic inches)

A preliminary try-out of the tests was arranged in Moray House Demonstration School, Edinburgh, in order to find out the time required for the tests and the order of difficulty of the questions. The tests were given to thirty-three children, and the time at which each child finished was noted. Answer patterns for each test were drawn up on the basis of the results. When rearranging the questions it was deemed advisable to keep them almost exactly in matched pairs, though the answer pattern might not give the same order of questions for each test, i.e., Question 10 in Test No. 13 corresponded to Question 10 in Test No. 12. In one or two cases the order of two questions was reversed in order to reduce the chance of the child spotting the similarity between the questions, but it was thought desirable that if the child reached (say) Question 28 in each test he should have done twenty-eight matched pairs of questions.

It is recognized that in making the problems capable of solution mentally, we are eliminating one of the factors which causes difficulty, and that we may be reducing the possible difference between the scores in the two sets of problems. Against this loss we had to set the gain in reliability obtained as a result of complete objectivity in marking. In each set of problems each problem was simply marked right or wrong, and the score was the number of right answers.

Test for Familiarity of Situation.

In addition to the battery of thirteen tests just described, a test involving no arithmetical work was given to a random sample of seventy-four of the children in the large group, to find out if the situations involved in the problems were familiar or unfamiliar to the children. It will be remembered that in some of the previous researches an adult's estimate of what was familiar and what was unfamiliar was used, a fact which tended to detract from the value of the results. A test consisting of thirty items, fifteen referring to the supposedly familiar situations and fifteen referring to the supposedly unfamiliar situations, was given. The results which will be quoted later indicated quite clearly that there was for the children a vast difference between the situations involved in the two sets of arithmetic problems.

As this is a point on which the present research differs from previous experiments, it may be advisable to quote one or two examples of the questions used in this test.

- (1) If you were to buy 1d. worth of toffees how many do you think you would get ? Would it be 2, 10, 100, 200 ?
- (2) How much does a bag of coal hold ? 1-lb., 1 stone, 1 cwt., 1 ton ?
- (3) When you buy butter how much do you buy at a time ? 2-ozs., 1-lb., 1 stone, 1 cwt.¹
- (1) How much petrol does an ordinary petrol tin hold ? 1 gill, 1 pint, 1 gallon, 2 gallons, 10 gallons ?
- (2) How many papers will a rotary machine turn out in an hour ? Will it be 100, 500, 5,000, 50,000 ?
- (3) How much will a cubic foot of mercury weigh ? Will it be 1-lb., 10-lbs., 100-lbs., 2,000-lbs. ?

It should be obvious to which type of situation the two groups refer. The questions were asked orally, but the choices were written on the blackboard, and the children wrote down the one which they thought was correct.

It will be noticed that in most cases the questions do not refer to the specific situations involved in the arithmetic problems, but to the general type of situation involved.

This was necessary since direct questions might have influenced the arithmetic results. As many of the arithmetic questions referred to very similar situations, it was possible to cover the situations involved with this small number of questions.

IV.—SUBJECTS OF THE TESTS AND ADMINISTRATION.

It was hoped to test 200 11-year-old children and 200 10-year-old children, but war-time conditions made this almost impossible. At the time that the testing had to be carried out most Edinburgh children were being educated in small groups in their homes, conditions which were quite unsuitable for testing a large number.

Three hundred and fifty-two children from a neighbouring county were tested, namely, all the 11-year-olds and all the 10-year-olds in two schools. Of the 352 who sat the tests 152 were eleven years old and of these 134 sat all the tests. In the present research only the results from this group of 134 are included.²

In testing, the time-table shown in Table III was adhered to in each school.

¹This was before butter was rationed.

²My thanks are due to the head masters and staffs of these two schools for the time placed at my disposal, and for the assistance which they so willingly gave.

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TABLE III.—TESTING TIME-TABLE.

<i>Day.</i>	<i>Group A.</i>	<i>Group B.</i>
MONDAY	Group Intelligence Test. Arithmetic Fundamentals.	Group Intelligence Test. Arithmetic Fundamentals.
TUESDAY	<i>Letter Series.</i> Opposites and Analogies. Reasoning.	<i>Number Series.</i> Opposites and Analogies. Reasoning.
WEDNESDAY	<i>Number Series.</i> Spelling. Vocabulary. Interpretation.	<i>Letter Series.</i> Spelling. Vocabulary. Interpretation.
THURSDAY.....	Arithmetic Problems. <i>(Unfamiliar Situations)</i>	Arithmetic Problems. <i>(Familiar Situations)</i>
FRIDAY	Arithmetic Problems. <i>(Familiar Situations.)</i>	Arithmetic Problems. <i>(Unfamiliar Situations.)</i>

Groups A and B were two equal groups formed on the basis of the raw scores obtained in the intelligence test. The mean age of the group tested was 11 years 5·2 months.

It will be noticed that the only tests which differ for the two groups are the Series Tests and the Arithmetic Problems. Group A were given Letter Series followed by Number Series and Arithmetic Problems (*Unfamiliar Situations*), followed by Arithmetic Problems (*Familiar Situations*). The order of each of these pairs of tests was reversed for Group B (see time-table). It should also be noted that in each case these tests were given first thing in the morning, so that the children's performance in them would not be influenced by any other tests just performed.

The Spearman and Stephenson Tests were administered in the one school on Thursday and Friday after the arithmetic tests, and in the other school on the following Monday.

The test for familiarity of the situation was given to all the children in the smaller school (seventy-eight in number) after the Arithmetic Problems on the Thursday, i.e., it came between the two sets of problems. Strictly speaking, it would have been better to have administered this test some time before the other tests, and the situations used in the problems could then have been based on the results. As it turned out, however, the problems could not have been improved very much.

(To be concluded in the next number.)

SPECIAL PLACE EXAMINATIONS.

(University of London Press, pp. viii+71. 2s. 6d.)

This is the report of an investigation by a Joint Committee of the West Riding Teachers' Association and the West Yorkshire County Association of the National Union of Teachers. It is a happy sign of the times that teachers' organizations should be carrying out such useful research, and the Committee is to be congratulated on its enterprise, and on the planning of the enquiry.

Some 2,000 children in West Riding schools were tested by means of: (a) ordinary types of examination papers in English and arithmetic; (b) 'new type' examination papers in the same subjects; and (c) several Moray House intelligence tests. The 'new type' examinations in English and arithmetic were also standardized by Moray House, and the statistical analysis of the results of the examination papers and of the intelligence tests was carried out by Professor Godfrey Thomson and Mr. W. G. Emmett. This was done with all the thoroughness and exactitude we should expect from these investigators.

These examination tests represented the entrance or special-place examination for secondary schools, the children being between the ages of ten and eleven. The inclusion of the 'new type' examination papers in arithmetic and English and the comparison of their results with those of the ordinary types of examination and with the intelligence tests give a special interest to this investigation.

The question then arose as to what criterion should be adopted to determine the relative value of these various tests as predictive of success in the secondary school. It was decided that for 'a preliminary assessment the opinions of teachers in the primary schools would provide a very satisfactory criterion' (p. 17).

The correlations were calculated between the performances in the various tests and the orders of merit drawn up by the primary teachers of the schools the children came from—that is, the order of merit from the point of view of their suitability for secondary education. Admittedly this was not nearly so satisfactory a criterion as the actual records of the children in their subsequent secondary school careers, but the present results are offered as a kind of interim report. A later enquiry will deal with the validity of the elementary schools teachers' assessments in the light of the children's performance in the secondary schools.

It is well that this limitation of the value of the criterion should be kept in mind in considering these reports. There is, indeed, already evidence on the validity of such a criterion. For example, one enquiry was made in a large examination centre (a large city in the Midlands), which had found year after year that pupils who were not recommended as suitable for secondary schools, but whose parents wished them to sit the entrance examination, did, as a body, very much worse in the examination than those recommended by the primary heads. This substantial reliability of the judgment of the heads, however, was consistent with a large number of serious individual errors. Thus it was found on investigation that, at the end of the first year in the secondary school, about one-third of the non-recommended children were actually above the average of the whole group in secondary school order, and this superiority was retained at the end of the fourth year. The performance of those non-recommended children who *only just* succeeded in gaining admission to the secondary schools was specially analysed, and this analysis showed that approximately 25 per cent of the non-recommended children who *only just* scraped through

the examination, were, at the end of the first year, classed by the secondary schools as being above the average of the whole group.¹

The criterion, then, of the primary heads' orders cannot be regarded as nearly so satisfactory as the subsequent careers of the children in the secondary schools. Indeed, Professor Thomson himself points out, when the highest correlation with the criterion is given by the arithmetic test paper, that arithmetic is likely to weigh unduly, and more than English, in the assessments of the primary schools.

Let us now turn to some of the main conclusions of this interesting enquiry. The main result is that all the correlations (that is of (a) the separate county minor examination in English, (b) the county minor paper in arithmetic, (c) the Moray House 'new type' English, (d) the 'new type' arithmetic, and (e) the Moray House intelligence tests) give correlations round about .8 with the estimates of the teachers, the lowest being Moray House English, .79, and the highest Moray House arithmetic, .84. (I quote only to two decimal places, though three are given.)

Here undoubtedly is one very interesting fact, namely, that the 'new type' examination papers in English and arithmetic are as useful (according to this criterion) as are the ordinary types of examination papers. In view of the greater ease with which the 'new type' papers can be standardized and marked, this surely is a very strong reason for their being preferred.

Then the multiple correlation of the county minor examination, including the intelligence tests, was calculated, using the best weighted team, and it was found to be .88, practically identical with the multiple correlation of the standard tests according to the best weighted team, a strikingly high correlation, but only slightly higher than the correlation obtained by massing together the three intelligence tests, which gave about .86 with school estimates.

We now come to the recommendation for which the Committee and their editor seem to be responsible. The first of these (p. 57) runs as follows :

"When the number of places, available in secondary (grammar) schools, becomes sufficient to accommodate all children who are fitted to profit by the education which such schools furnish, and who wish to avail themselves of it, the decision as to the type of post-primary education to which a child should be promoted, at the age of 11 plus, should be made after consultation between the head teacher of the junior school in which the child is being taught and the heads of the various schools to which he may be transferred. Regard should be paid also to the wishes of the parent. The decision will depend upon certain factors: the child's capacity, his attainments, his character traits and his interests. To this end the factors upon which the decision is to be based should be assessed and recorded systematically during the child's primary school career, the assessment being, as far as possible, objective in character."

The records referred to include those of 'physical condition,' 'intelligence quotient' as obtained by annual tests, 'education quotient' obtained by a yearly examination, 'temperament' estimates, etc. On p. 58 it is stated:

"It must be understood that record cards are the absolute property of the schools concerned and are for the sole use of the heads of those schools. The information recorded on the cards is private and confidential and must not, in any case, be divulged to extra-scholastic authorities. The cards are intended to serve an educational purpose only."

It does not seem clear how the factors on which the decision as to admission are based are very 'objective,' if the tests and examinations are considered by the primary and

¹ See H. ALICE EVANS, "The Secondary School Careers of Children not Recommended by Heads of their Elementary Schools."—*This Journal*, Vol. X, 1940, p. 154.

secondary heads who are to make the final decision, and the records of different schools compared. It would seem obviously unfair to leave the decision as to whether a child is or is not fit to profit by secondary education to the head of his school; for his standard might be much more severe than that of some other heads.

The second type of procedure recommended refers to those areas in which the grammar schools are unable to accommodate all the children selected as fitted to profit from secondary education. Here, it is said, "the results of an external examination must be substituted for the judgment of the teacher." On the basis of the investigation reported earlier in the book it is concluded that it matters little which type of examination is employed; therefore in view of the bad effect on the primary school curriculum of the examination at 11 plus, and of the reliability and speed of marking, etc., an intelligence test is the best. It seems that in this second case also the primary teachers' estimates are to be brought in, and where there is discrepancy between the results of the external examination and the teachers' estimates, a supplementary examination is to be held. This is to be pretty much a repetition of the first examination, but there does not seem to be a good reason why, if a group intelligence test only was used before, the second examination should also be only a group intelligence test, except, of course, to make the results more comparable. The Committee thinks that this 'safeguard' can indeed be secured at an earlier stage by the application of intelligence tests in the junior school towards the end of each year.

Now let us consider these two main types of recommendations. There seems to be nothing in the correlations afforded by the investigation to justify the first suggestion, namely, the reliance on the recommendations of the heads of schools, even if they have the intelligence quotients and education quotients before them. The justification would seem to depend, indeed, upon a reversal of the rôle played by the criterion and the various tests in this investigation. We must assume that the tests are the criterion and that they justify the reliance upon the estimates of the teachers which so closely resemble them. But these must, of course, refer to the order of merit within each particular school, and there is no indication in the correlations that the *relative judgments* of the different heads are sound.

It seems to me, however, that the main object of the Committee could be obtained in a relatively simple manner of the type I have already recommended elsewhere.¹ There it was pointed out that all the results which had come under my own enquiries and that of others so far published, agreed in showing that the addition of papers in arithmetic and English to intelligence tests improved very little, if at all, the correlations between (a) the order of merit in the whole entrance examination, and (b) the order of merit at the end of four or five years in the secondary school.² It was argued, therefore, that one could

¹ In the booklet *Examinations and the Examinee*, Chap. II, 1938.

² The enquiry most favourable to the use of the combined examination plus tests is that by Godfrey Thomson reported in this *Journal*, Vol. VI, 1936, p. 174. This was a very wide survey in the West Riding. The correlation between the I.Q. and the order of merit after two years in the secondary school was .41, that between the order of merit and the combined tests (Arithmetic, English and I.Q.) was .49. But it is uncertain how far this higher correlation may be due merely to having more tests (of any kind), for one has to bear in mind the variation of a child's performance at different times even in similar intelligence tests. So far as the higher correlation of the combined tests was due to the testing of specific abilities in arithmetic and English, and especially to qualities of character (devotion to work, etc.) required for success in the secondary school, it is precisely these which would be included in the estimates of the primary heads, which I suggest later should be combined with the I.Q.'s. This, I think, would meet the objections of the examiners given in the Appendix of this book against the dropping of the papers in English and Arithmetic.

rely upon the intelligence test alone—for the general testing of the particular area. That would have the great advantage of avoiding the evils of cramming in some primary schools, emphasized again in the report before us, and of special coaching arranged by parents or by teachers in certain schools. Indeed, the abolition of the examination in English and arithmetic might have a beneficial effect upon some infant schools, for I have been assured by a number of experienced teachers that even in the infant schools children are often hurried on, in their arithmetic especially, because the school has in view the secondary school entrance examination.

In order, however, to supplement the results of the intelligence test with some estimate which is determined partly by the child's interests, his conscientiousness, devotion to study, and so forth, I suggested that first an order of merit within his own school should be obtained from each head of a primary school; then, in order to overcome the difficulty of assessing one head's recommendation against those of others, reference should be made to the intelligence test to see how many children in Mr. A.'s school as compared with Mr. B.'s seem worthy, judging by their I.Q., of admission to the secondary school, bearing in mind the number of the vacancies in the secondary schools. Then within the quota (determined by the intelligence test) the children selected in a given primary school could depend upon (a) the head's list, and (b) the order of merit according to the intelligence quotient, these two being weighted according to the decision of the local education authority. (I suggested the weight given to the I.Q. should be two or three times that given to the head's estimate.) Of course, the head in making his estimates could take into account all work done in the school, including examination tests which had been made previously. It was also strongly recommended that several intelligence tests should be used, in view of the possible variation of performance in similar intelligence tests by the same child at different times¹; but surely it would be better that these should be given in the last year rather than partly in the earlier years?

To put it more briefly, the intelligence tests would determine the quota of school A and of school B, etc.; but in the selection of school A's quota, the head's estimates should have an important influence. May I suggest to the Committee that some such plan would meet the weakest point in their scheme, namely, the variability in the standards of different heads.

In the meantime, we may welcome this most useful contribution to what remains a difficult and complex problem. It seems doubtful, however, how far further improvements can be made in our technique of selection for secondary education (unless valid tests of specific abilities can be devised for eleven-year-olds) and that one must look for the solution of the problem (or, rather, for compensating for the inevitable errors) in the lessening of great differences between the education of those selected and not selected at eleven years by lengthening and improving senior school education and extending it in continuation schools, and by facilitating later transference at least *upwards* from the senior to the secondary or technical school.

C. W. VALENTINE.

¹ See ALLAN G. RODOCK: "The Application of Six Group Intelligence Tests to the Same Children and the Effects of Practice,"—*This Journal*, Vol. VI, 1936, p. 291. The average range of I.Q.'s of the children tested was ten points, the highest being twenty-four points.

SUMMARIES OF RESEARCHES REPORTED IN DEGREE THESES.

THESE OUTLINES MUST BE SUBMITTED THROUGH THE HEAD OF
THE DEPARTMENT IN WHICH THE RESEARCH WAS CARRIED OUT.

A Factorial Study of Types of Fear.

*Thesis submitted as part qualification for the B.Sc. (Hon.) Degree in the University of London.
(Temporarily lodged in the Library, Psychological Department, University College (London),
Aberystwyth.)*

By L. S. PIDDINGTON.

In an earlier research on children carried out by Burt's P-technique and briefly reported in this *Journal* (Vol. VIII, p. 314) Miss Campbell found evidence for two contrasted types of fear—physical and social—producing two contrasted temperamental types or tendencies. The primary object of the present investigation was to verify this conclusion by a more intensive inquiry among adult students who had had some training in psychology. Lists of objects or situations arousing fear were first collected, and then reduced to thirty-two main kinds. In a preliminary study the examinees were asked to *rank* these situations on a scale according to the amount of fear which each aroused. It was found that the marks allotted by each person conformed more closely to a rectilinear than to a normal distribution. In discussions on the correlation of persons it has been contended (e.g., by Stephenson) that, just as persons are distributed normally for certain traits, so trait-measurements are distributed normally within the same person. The results here obtained contradict this assumption, and suggest a linear ranking (with free use of brackets or 'ties') as likely to yield the best rough approximation.

Accordingly, a small selected group of six men and six women, whose temperamental characteristics were well known to the investigator, were asked to *rank* the list (duly revised for the purpose). The representative character of the set was checked by similar rankings obtained by a questionnaire distributed to eighty-five persons in various walks of life. For the selected group the correlations between persons were factorized by Burt's method of simple summation; and it appeared that the correlations could be accounted for to a close approximation by two factors only. (1) The first or 'general' factor evidently represents the general order in which the various items are found alarming by most human beings belonging to the cultural group here studied; (2) the second or 'bipolar' factor was found to divide the group into two equal halves—the first consisting entirely of men (with one exception) and the second entirely of women (with one exception). Two rankings were then constructed, one for each of the two contrasted tendencies—the masculine and the feminine types, as they may provisionally be termed. At this stage a novel feature was the need to adapt factorial methods to measurements obtained, not in standard measure, but in terms of ranks: instead of computing factor-measurements by regression-equations based on the inverse of the correlation matrix (a laborious procedure); they were calculated by taking weighted sums of the initial rankings (to represent the first factor), and then deducting a duly weighted version of this ranking, and finally summing the weighted residuals (to obtain the second factor)—a procedure suggested by Burt. The orders thus obtained were checked by weighted rankings from the larger group.

The distinctive fears of the women proved to be largely of an irrational, superstitious, or even neurotic type (e.g., dead animals, ghosts, loud noises, the dark, committing a social *fauz pas*, committing a sin, sleeping alone in a house, being accosted by strangers, paying visits to strange institutions, visiting the dentist, physical pain). In the masculine list these fears dropped towards the bottom. The predominant fears of the men are for the most part more objective and rational, and show a greater relation to the individual's actual difficulties (economic insecurity, illness, blindness, surgical operations, death, house on fire, appearing cowardly, falling below expected standards of efficiency, etc.). The distinction was less obvious between physical and social fears (e.g., fears of bodily injury, disease, or death, and fears of meeting strangers, making a speech, appearing improperly dressed); and both would seem to vary according to cultural class. The degree to which each individual inclined towards the 'masculine' or 'feminine' type proved to be closely correlated with his more general temperamental characteristics—especially with introversion or extraversion, and with discernible neurotic or psychotic tendencies.

BOOK REVIEWS.

The Future in Education: By Sir RICHARD LIVINGSTONE (Cambridge University Press, pp. 127, 3s. 6d. net.)

The main thesis of this attractive book is that education is a lifelong process, but in this country it ceases for a large majority at an age when it can have had little significance or lasting value. The future in education depends therefore on a new appreciation of the importance of adult education for all our people and the devising of means for its realization.

But to state the case thus baldly is to do the book an injustice: it is fresh and persuasive in ideas, rich in illustration from experience and reading, sympathetic in understanding, mellow and wise in reflection. It is the garnered wisdom of a life of study, teaching and travel, and it emphasizes a need which tends to be overlooked in the schemes of replanning. Sir Richard Livingstone has rendered a great service by writing so convincing and so readable a book.

The psychological argument is that literature, history and philosophy are beyond the experience of the young and therefore largely meaningless to them. The historical argument is that the Folk High Schools of Denmark met the needs of a people no more intellectual than our own and begat a popular culture which brought fresh vitality to a nation. The spiritual argument is that with 'a faith and driving force' a similar victory is possible for us.

While there is deep and pregnant significance in these arguments it is legitimate to ask whether they are not unduly pressed in order to support a case. The third is self-evident provided that out of our present chaos there emerges a deeper unity and a more exalted dynamic, a spiritual principle that transforms selfish impulse into unselfish service. About the second we may ask whether we can transplant a foreign institution, born of particular circumstances and peculiar to its time and place, to our own soil. The Danish Folk High School has been a mighty force not only in Denmark but in all Scandinavian countries, though there was some evidence that its strength was declining before 1939, and especially in Sweden and Norway. The agricultural economy of Denmark is so different from our own industrial and urban development that it is difficult to imagine we shall find a solution along similar lines, and Sir Richard Livingstone admits the difficulty, though he adds with truth that difficulties can be overcome when people wish to overcome them. But his conclusion suggests that it is not a rigid imitation he has in mind:

"There will be no need to build colleges. All over the country great houses will be vacant, calling for occupation, purchasable for a song. Why should not each Local Educational Authority start its own house of education? It need not follow the exact lines of the (Danish Folk High Schools) if that is found impracticable. It might be used for week-ends, or for weeks, of study, for educational or other conferences. Out of small beginnings great developments might grow."

The argument that certain studies are beyond the understanding of the young raises many controversies. In order to justify it Sir Richard Livingstone is tempted to indict present-day schools which send boys up to the university with 'no clear philosophy of life,' though one gathers from other pages of the book that a philosophy is impossible without experience. There is also an indictment of the methods of teaching history and literature in our schools and we are offered the contrast of the 'poor little child of fourteen' learning about the Treaty of Utrecht and the Pragmatic Sanction, and the invigorating teaching of the Danish High Schools where history and literature are 'taught as Ruskin or Carlyle might have taught them.' And no sooner does one pause to wonder at a contrast so unjust than the answer is given, "a teacher's outlook educates more than anything that he says." It is pretty certain that there are some teachers both here and in Denmark who can bring history and literature to life for their pupils; and equally certain that neither country has an over-supply of them.

Sir Richard answers himself on another point. There is an account early in the book of an experience which brought a richer meaning to a line of Virgil, and the incident is described in order to support the claim that 'experience was necessary to real understanding.' The incident happened on a walk in Switzerland on a December afternoon, a fact which might suggest that popular adult education may turn out to be alarmingly expensive, however attractive. But on a later page we are reassured:

"Do you wish to visit the hills near Sorrento? Read Browning's *Englishman in Italy*; or to see a famous view over the Lombard Plain? Read Shelley's *Lines on the Euganean Hills*. The visit can be made from an armchair; and besides seeing Italy, you will be seeing it with the eyes of a poet.... Nothing except actual travel can give us such an experience, and even travel cannot give it. For we should see the scene with our own dull eyes."

The fact is that the phrase 'experience of life,' which Sir Richard claims as necessary, is highly ambiguous. Every living person has it in some degree by the mere fact of living, and the schoolboy has it, however limited and meagre it may be. Modern educational literature, led especially by Dewey, is fully aware of the problem of relating instruction to the child's experience, and the teaching in our schools has been largely transformed during the present century, though probably least in the schools Sir Richard knows best. But it is fortunate that mental growth is not dependent on experience and transcends it, and that by imagination we can proceed beyond the limitations of time and place.

This objection is not to weaken the case for adult education. Interests change with mental growth and the adult curriculum will differ from that suited to the schoolboy. The problem of an educated democracy, more alert in mind, more stable in judgment, more critical towards mass propaganda, more steadfast in seeking the guidance of general principles, is one which the present times dare not ignore, and Sir Richard Livingstone has done an important service in bringing it so vividly before the public.

F.S.

Child Expression in Colour and Form: By HILDA WALLEY OLDSHAM. (John Lane : The Bodley Head, 1940, pp. 156. 9s. 6d. net.)

This interesting and original book is an excellent piece of pioneer work by a lover of children and of art, who is also a mathematician and a psychologist with first-hand knowledge of children, normal and maladjusted. In the words of Mr. Wolters, President of the British Psychological Society, who writes the introduction. "We may well be grateful for this stimulating introduction to a line of research which is as difficult as it is fascinating, grateful both for the factual information and the theoretical discussions contained in her book." It will be useful to students of general psychology, and to students of aesthetics, and also very interesting to teachers and parents. It is full of discussions of general interest. It is never dull or prosy, and it is often provocative or entertaining. There are numerous well-chosen and striking illustrations, some in colour and beautifully reproduced.

Two thousand drawings were obtained from 800 children of nursery to secondary school age. These were supplemented by the children's explanations when necessary. The aim was to investigate the connection between the child's art and the rest of his life, his thoughts, dreams, religion, unfulfilled wishes, sensations, emotions, and the extent to which he can or does express these in colour and form. Sometimes the children were asked to draw anything they liked. Sometimes they were given more definite instructions: to listen to a piece of music (e.g., the 'Londonderry Air') and to translate it into colour and form; to imagine or think of certain sensations (e.g., the smell of roses and onions, or the touch of velvet and sacking), and then to represent them in drawing; to paint the colours they associated with fear, anger, joy, sorrow, and so on.

The results are extremely interesting in themselves, and in the discussion they provoke. Unique individual mental states are expressed in the drawings (e.g., "The little girl has just finished her sum" (Fig. 5), or 'fear' represented by ghosts with daggers through their hearts, the nightmare which woke up a boy of eight (page 78). So, too, are group attitudes and associations as in the differences between English and Spanish children's drawings (page 47), or those of girls and boys (page 31), differences which are not necessarily innate but are often mainly environmental. Thirdly, common human characteristics are expressed, for children throughout the world draw similarly as well as differently, e.g., the same schema for a man (Figs 1-3). A child's copy of a circle, square or man, gives a rough guide to his mental age in the early years, and it is interesting to note that a man introduced to us on page 8, recently injudicious in his dealings with alcohol and coal-gas, easily carried out certain other directed movements but could not reach the level of a child of three or four years (page 22) in copying a square. The teaching of art in schools and its correlation with English, history, science, needlework and mathematics, are usefully discussed. So, too, is the effect of forcing conventional values in art, like proportion, neatness and accuracy. The view is taken that such forcing interferes with the child's natural gifts of expression in colour and form, and may also interfere with the gradual growth of true standards in his understanding and evaluation of all his school work. The child may draw well-proportioned pictures and yet fail to understand proportion in either geometry or life, but he can gradually be led to apply principles to things in general. In view of the possibility of misunderstanding here, it should be noted that the author disclaims any suggestion of "transferability from drawing to geometry, from geometry to life."

Symbolism and surrealism, and the relation of art to play, provide chapters of particular interest. Sometimes divergence of view between the authorities quoted may turn out to be more apparent than real—e.g., Alexander probably laid himself open to misunderstanding in the sentence quoted on page 150. "The constructive instinct then becomes artistic when it ceases to be practical, and it ceases to be practical when it is pursued for its own sake and the constructed object is used as the satisfaction of the constructive passion itself." In an earlier sentence in the lecture quoted he wrote "merely practical," and if we follow his derivation of the aesthetic impulse from the constructive instinct (*Beauty and Other Forms of Value*, 1933, p. 18) we may venture to suppose that common ground could be found in the idea that the aesthetic, the constructional, and the useful are not mutually exclusive, but may enhance one another. We are thus led to Dr. Oldham's view that "Art is not debased if used in the service of the community." As regards the relation of art to play, however, Alexander definitely stated (*Art and Instinct*, 1927), "Spencer was mistaken . . . when he affiliated art with play," whereas Dr. Oldham's view is that "art belongs to the great, inspiring, all-important world of play."

Walter Disney's recent production, "Fantasia," which he calls an 'exciting adventure,' becomes even more exciting when considered in the light of this book. Disney seems to be on the track of a new way to present on the screen "the great music of all time" through the combination of the music with abstract colour, form and movement. As Dr. Oldham points out, the aesthetic and commercial possibilities of colour and form-associations with other sensations, and with emotions, are only beginning to be realized. To the present reviewer these possibilities seem to be so great that, without some reasonable assurance that commercial application will not exploit them or abuse them, perhaps it would be better for them to remain undeveloped.

Finally, here are some criticisms on points of detail. The two pages facing pages 62 and 64 should be interchanged to fit the text, which would also benefit by the following changes, page 70, line 28, read *or* for *of*; page 91, lines 8 and 9, the word *yet* should stand at the beginning of the second sentence; page 122, line 1, read *7* for *6*; page 150, line 18, read *70* for *9*. An index would have been useful.

Personality and Mental Illness: By JOHN BOWLBY. (Kegan, Paul, Trubner, Trench and Co., pp. 280. 10s. 6d.)

There is a natural tendency amongst scientists to attempt to classify and categorize their subject matter so that well-defined groups of whatever units they deal with may be filed into convenient pigeon-holes, but since the advent of relativity it has been found that nature does not work quite in that way.

Mental diseases have been no exception to this rule, and Dr. Bowlby argues very convincingly that patients do not stay put in nosological pigeon-holes either, and that the same individual in the course of his life may exhibit symptoms of all sorts, both of psycho-neurotic and psychotic disease except that in his opinion:

Every boy and every girl
Who's born into this world alive,
Is either a little schizothyme
Or else a little affective.

He believes that the distinction between schizoid and syntonic or cycloid is inherent, and probably hereditary, and cannot be altered throughout life by any means.

He believes further that certain sub-types of personality within these groups may be distinguished. These are almost as static though they may change occasionally, spontaneously rather than as the result of treatment. The development of symptoms depend on the stability or instability of the individual and the stress of environmental factors. Both these can be altered, the former by psychotherapy, especially deep analysis.

These theoretical conclusions are based on the use of personality criteria, of which he employs 105. The study comprises a careful application of this battery to sixty-five patients, thirty-six of which were undoubtedly psychotic, the remaining twenty-nine being regarded as psychoneurotic or psychopathic personalities. He considers that thirty-three are specifically schizoid traits and seventy-two non-specific traits and admits that it is only the schizoids and but 50 per cent of these who can really be distinguished as presenting a large number of specific traits, all other conditions having no specific personality traits.

It is easy to criticize this sort of work, and indeed Dr. Bowlby does so himself. There are not enough cases to be statistically valid, the use of these rather vague tests depends so much on how they are applied and the interpretation put upon them by the tester. There is a risk of twisting results to fit preconceived theories and the originator of any such classificatory categories will always find results to satisfy at least himself.

In spite of such criticisms, however, there is no question that Dr. Bowlby has presented us with an intensely interesting essay which demands the most careful study, and it is to be hoped that he and other psychiatrists will continue to work along these lines so as to clarify the issue still further and decide once and for all what is the difference between psycho-neurosis and psychosis and whether there are more than two genetic psycho-pathic types, schizoid and syntonic. Recent electroencephalographic studies suggest that an epileptic type may be added to these two.

This book has an appreciative letter from the late Professor Mapother in place of the foreword which would have been written had not his last fatal illness prevented it. Various efforts to distinguish personalities in relation to mental illness are discussed and, as has been said, only Kretschmer's distinctions between schizoid and cycloid or syntonic seem valid to the author. After describing the traits he uses he discusses the various types of schizoids and cycloids which he believes can be distinguished either in his own cases and in those described in the literature.

He then gives illustrations of syntonic and schizoid personalities of psycho-neurotics and psychopathic personalities and, finally, re-discusses psychiatric diagnosis.

In two appendices more detail is given first of what he calls the thirty-three specific schizoid traits, and, secondly, of the seventy-two non-specific traits.

Although this book will be specially interesting to medical psychologists, the theme is one which cannot but be important to all those interested in psychology and all ought to study it. Those who do so will find it readable and well produced and stimulating for their own work.

R.G.G.

How We Learn: By BOYD HENRY BODE. (D. C. Heath, Boston, pp. 308.)

Everyone would admit that a theory of educational aims and procedure in the broadest sense must be based on the writer's standpoint as regards philosophy, psychology, ethics and politics; but a book which not only deduces the writer's own educational theory back to his philosophy through each of these stages, but also attempts to do the same for all the leading theories of education which have in turn held the field, is obviously not easy to review both briefly and effectively. I think the development of its argument may best be indicated by a series of quotations.

Philosophy.—"The term 'mind' is a name . . . for a function of the environment" (p. 224), "a function of symbolizing or forecasting" (p. 225).

Psychology.—(1) "The 'stimulus' does not precede the 'response,' but both the two operate simultaneously" (p. 226).

(2) "The self is not something we are born with, but something that is acquired" (p. 256), i.e., from this stimulus-response activity.

Pure Educational Theory—"The school, ideally, is a place where pupils go in order to carry on certain activities, from which certain reconstructions or reorganizations of experience are expected to result" (p. 246). "The character or quality of our experiences is determined by our responses" (p. 246).

Ethics—"In this modern age the environment that is inescapably with us all the time is our social environment" (p. 246). "Our general pattern or scheme of values must be derived from experience itself and not from any set of principles which claim authority on the ground that they have a cosmic origin and sanction." "Such a pattern can have no test or validation save the fact that, in some sense or other, it serves to 'promote better adjustment'." "This better adjustment which is missed if any one type of selfhood is developed at the expense of the rest must consist in some pattern of social relationships" (p. 260).

Politics.—The next ten pages in effect say "and this pattern is democracy."

Applied Educational Theory.—Hence the function of the school is to educate for a democratic environment. "A democratic school may be expected both to give actual experience in democratic living and to foster intellectual insight, or understanding of the principle on which democracy is based and which give it its distinctive character" (p. 272). The author recognizes that many persons accept the conclusion without reaching it by this line of deduction.

The first 215 pages are an attempt to give the prospective teacher who has not studied philosophy an outline of the main views on mind and matter which have been held since Greek times and the educational theories which have agreed with them—we can hardly say "have been based on them," since the author, as a good pragmatist, thinks that the philosophic theories were invented to suit the desired applications rather than the applications were the result of the theories. This account is very readable and would probably achieve its aim. It is needless to say that it contains much with which persons who are not pragmatists would disagree; but no one could write such a historical summary without judging other views in the light of his own. The oft-repeated attribution of the formal discipline theory to the supporters of classicism is made; of course, its real authors were the French Rationalists who succeeded Descartes, and it was used in support of mathematics, e.g., by Locke; it was only later that the classical people defended their subject on this basis at a time when it was universally accepted.

Every reader, according to his philosophical position, will be able to supply his own criticism to the writer's own theories, contained in Chapters XIV-XVII. For my own part, I should find its weakest point in the statement that a scale of values, being reached by experience, can have no 'cosmic origin,' i.e., I presume, objectivity. We might as well say that physical science has no 'cosmic origin' because it is based on human observation and experiment. After all, the manner in which the physicist's assumed 'real' world is translated into the world of experience is governed by law, that is it has a 'cosmic origin.'

R.L.A.

The Human Mind: By MURDO MACKENZIE. (J. and A. Churchill, Ltd., London, 1941, pp. 215. 7s. 6d.)

This essay in medical psychology is, as the author is pleased to say of the works of certain eminent authorities, stimulating reading.

Psychotherapy is at present at any rate an art rather than a science. It can be learnt, but in spite of the efforts of the psycho-analysts to formulate a more or less exact body of doctrine, hard to teach.

Every competent psychotherapist must therefore formulate for himself some sort of framework into which he can fit his patients and by means of which he can apportion the proper treatment. If this framework is reasonably simple and definite and if it proves in his own hands a useful adjuvant to diagnosis and treatment, its creator will almost inevitably feel a desire to let others into the secret of his success, and so will write one more book in which it is asserted that the expert in mental medicine needs only to adopt the author's scheme to abolish the difficulties and complexities of his task.

This is what Dr. Murdo Mackenzie has done and, as has been said, the result is stimulating reading, but the decision as to whether it is anything more must be left to the future, till it is discovered whether other psycho-therapists find his framework as useful as he does himself.

According to the author the mind works either by simplification, an attempt to formulate philosophic unifying principles, or amplification, an effort to collect scientific evidence. The author obviously prefers simplification. A cross classification is deliberation and immediacy. The deliberative is concerned with the past and the future, while the immediate is concerned with the present instant. The author prefers the deliberative and thinks deliberative simplification is the British genius which has been overlaid by an attempt to be immediate and to work by amplification to the detriment of our political and social existence. He then discusses various psycho-neurotic and psychotic symptoms in relation to this classification.

The life history of a gifted psycho-neurotic woman is discussed in some detail as an illustration followed by a discussion of the author's therapeutic methods largely on lines of persuasion and explanation.

Finally, national characteristics are dealt with and a dissertation on the first years of the present war, which, in the light of recent events, might have been better postponed till more data were available.

The book is undoubtedly interesting, but is rather condensed and in places confused, so that it will not be very easily read by those who are not entirely *au fait* with modern psychological medicine.

R.G.G.

Controlling Human Behaviour: By D. STARCH, H. M. STANTON, and W. KOERTH. (Macmillan, pp. xiv+638. 12s. 6d.)

In this book, designed to be a first book in psychology for use in introductory courses in colleges and universities, the authors have tried to show clearly and vividly the relations between psychology and the problems of everyday life. They have, accordingly, in addition to presenting essential scientific material, illustrated copiously from life at home, at work, in the concert room, theatre and cinema, from the religious life and from the work of statesmen and administrators, and have shown how psychological knowledge can aid in the solving of the innumerable problems which arise in these spheres of human behaviour. In introducing material which is usually reserved for advanced courses the authors have been influenced by their knowledge that for the majority of students the first course in psychology will be the only course and their hope that by introducing this material more students will be induced to delve more deeply into the subject.

Rather more than half the book is devoted to a study of the chief mental processes with many references to the special problems involved in controlling one's own behaviour. Nearly half the book describes the application of psychological principles to the problems involved in attempting to control the behaviour of others. The last chapter is an attempt to apply the summarized wisdom of the ages to the problem of the development of each of us into well-rounded personalities.

The book in avoiding the danger of brevity which usually means disaster in an introductory text-book, gives such an abundance of illustrations and applications that there is a danger that immature untrained students will miss the scientific kernels because of the abundance of the surrounding vegetation. There is a danger, too, that the beginner may come to regard psychology as a mere collection of facts unless care is taken in the presentation of the subject to create a scientific attitude. The student of, say, chemistry is taught early in his course the importance of controlling conditions so that the effects of one change may be observed and a general conclusion established. That psychology is a science should be learned by every student of psychology, partly through taking part in experimental work under expert guidance, and partly through analysing the methods used by others; more attention to this would have increased the value of this book.

The authors are to be congratulated on having produced, not, it is true, the ideal introductory text-book of psychology for students, but a survey of psychological principles, of the results of researches into many psychological problems, and of the applications of these to many problems arising in everyday life; a survey which is of great interest and value to a wider public than that for whom the book was primarily designed, as the reviewer knows from the comments of a number to whom he had lent his copy, including teachers, preachers, business and working men and women.

A.E.C.

Psychology: By R. S. WOODWORTH (Methuen, pp. xlv+632. 12s. 6d. net.)

For the twelfth edition of this well-known text-book Professor Woodworth has reorganized much of his material as the result of further experience in the use of the text-book with students. The discussion of personality has been amplified and the treatment of the nervous system has been thoroughly revised. Pictorial aids are largely new. Apart from these changes the book remains substantially as it was in earlier editions, so that a detailed review is not called for. In view, however, of the undoubted influence of the critical treatment by Woodworth and other American psychologists of ideas of instinctive tendencies in human beings, we should like to raise the question as to whether the now popular terminology used here, namely, of 'drives' and 'unlearned behaviour,' signifies anything very different, fundamentally, from, say, the modified treatment of 'instinctive propensities' by McDougall in his later works, and whether the use of the term 'drive' does really avoid (as Woodworth claims) the confusion of using terms like 'instinct' and 'habit.' For 'unlearned motives' and unlearned 'trends of activities' (p. 871) are also complicated at very early stages with the effects of experience, and that complication seems to be Woodworth's main objection to the use of the term 'instinct' concerning human beings. Fundamentally, then, there seems to be no great difference between Woodworth's view of the moving forces in human nature and the views that are predominant in this country. A special word of commendation must be expressed to the publishers for producing such a substantial book in so pleasing and convenient a form. We do not know, for example, of any text-book of the size, which opens so easily or which is better printed in spite of difficulties due to the war

C.W.V.

Primitive Intelligence and Environment. By S. D. PORTEUS. (Macmillan, pp. viii+325. 15s.)

The author, already well known for his psychological investigations into the behaviour of some Australian aborigines, has in this book made a valuable contribution to our scientific knowledge of racial differences among primitive peoples. He selected for intensive study two main groups: the aborigines of Central Australia and the bushmen of the Kalahari Desert, as they lived in such extremely unfavourable physical environments that any observed racial differences could not, he believed, be entirely due to environmental conditions.

The introduction, consisting of careful statements of principles which should govern any researches into the mental abilities of uncivilized people, should be studied by every student of human nature who intends to begin investigating the mental abilities or processes of any human beings.

The rest of the book falls into two main parts: descriptions of the physical environments of the peoples studied, and careful accounts of the tests used and of the results obtained.

The author has described the environmental conditions through the medium of a narrative of travel, a medium in which he succeeds in enabling readers to build up more realistic pictures of the conditions under which these primitive peoples live than would be constructed from bald geographical and economic data. He convinces us that conditions in Central Australia are worse than those in the Kalahari Desert, and produces evidence that the bushmen inhabiting the latter are inferior to the aborigines of Central Australia in the performance of all the tests used.

From these and other similar results Dr. Porteus draws the cautious conclusion that the more unfavourable physical environment does not appear always to have a depressing effect on the mental capacity of its inhabitants, and that therefore hereditary factors influence the mental capacities of members of different groups of human beings.

The value of this book lies not only in presenting evidence against the extremists who maintain that differences in environment are the sole determinants of racial differences but in making permanent the observations and records of a trained scientific psychologist on the environment and behaviour of rapidly vanishing peoples

A. R. C.

Punishment: Its Origin, Purpose and Psychology: By HANS VON HENTIG, (Hodge, pp. 239. 12s. 6d.)

The author, formerly Professor of Penal Law and Criminology at the University of Bonn-am-Rhein, has given in this book a translation of his book in German on the same topic. The author's psychological terminology is difficult to understand: the reader is asked to believe that a sane impulsiveness can be sensible of the harm as pain and can store it in its reservoir of conceptions as pain; what meaning can be given to such phrases as 'the senses' conception of artificially engendered pain, or an artificially erected sensation of impending damage?

The book does not succeed in aiding the reader to form clear ideas on the topics discussed, possibly because the author has not complete mastery of the language in which the book is written. An additional drawback to the serious student is the absence of footnotes and references. Surely it is of little use for the author to state that these will be found in the German and Danish editions.

The Marking of English Essays: A Report on an Investigation carried out by a Sub-Committee of the International Institute Examinations Enquiry Committee, consisting of Sir PHILIP HARTOG (Chairman), Dr. P. B. BALLARD, Dr. P. GURRAY, Professor H. R. HAMLEY, and Dr. C. EBBLEWHITE SMITH. (London: Macmillan and Co., 1941, pp. xv+165. 3s. 6d.)

This report on essay examining, for which Sir Philip Hartog, Dr. Ebblewhite Smith, and Dr. Ballard are chiefly responsible, represents a definite advance on previous ones in that it is constructive rather than merely critical. The primary object of the investigation was to test Hartog's theory that compositions written 'with a given audience and with a given object in view' (which he calls 'directed' essays) are more valuable pedagogically and more easy to mark consistently than are the conventional 'undirected' essays. Also that the chief category for which marks are awarded should be the extent to which they achieve this object, in other words the extent to which pupils write 'sense.' The eight professional examiners who took part, as well as the authors of the report, are convinced as to the value of marking for sense and of stimulating the writing of directed compositions. But the statistical analysis failed to show any superiority in the marking of this category.

The investigation was carried out in great detail and is replete with results and recommendations that are of interest to all teachers and examiners. These concern, for example, the earliest age at which reasonable compositions can be written and marked, the categories for which marks should be given, the impossibility of deciding whether or not a School Certificate candidate's essay should be regarded as 'literate,' and changes which might advantageously be made in English section of the Certificate examinations. Perhaps the most striking finding is that high or low marks for such categories as vocabulary, sentence structure, grammar, etc. (in fact, for all categories except sense and general impression) depend to a greater extent upon the idiosyncrasies of examiners and on their random errors than they do upon the actual merits of the pupils. The failure of the sense marks and the directed essays to show up better is attributed by the authors to the examiners being too steeped in old traditions of teaching and marking. To the reviewer another factor seems to be that the sense marks were awarded first in every instance, and this would tend to make them less reliable and consistent than, say, vocabulary, sentence structure, and general impression marks, which were awarded last.

Every educational psychologist is likely to have his own ideas about the adequacy of the methods of analysis. The reviewer's chief complaints are, first, that no use was made of the fact that every pupil wrote six essays; the analysis was carried out for each essay separately. Inter-comparisons should throw valuable light on the consistency of pupils, and on the far-reachingness of the examiners' 'halo effect.' Secondly, no deductions whatever were made from the intelligence and objective English tests which were also taken by the pupils. It is to be hoped that other members of the Sub-Committee will re-work the data and publish a supplementary report on these and other points which might have been studied.

P. E. V.

The Re-direction of Secondary Education: By GEORGE M. WILLEY, JUNR. (Macmillan and Co., pp. 493. 10s. 6d.)

The author of this book is Associate Commissioner of Education, State Education Department, Albany, New York. Much of its contents have relevance only for America; but English readers will find interest in the methods suggested to solve those same problems of adolescent education that we have been struggling with ourselves. Mr. Willey's main thesis is the need to bring the secondary school into closer relation with life. The public secondary school, he argues, unlike the private school, is maintained for all children of adolescent age, it cannot therefore restrict its functions to any particular social class, or to any selected type of child. Naturally, the American problems, though similar, are on a vastly larger scale. Thus in the period from 1900 to 1938, whilst the population as a whole has increased 72 per cent, the percentage increase of enrolments in public high schools shows the amazing figure of 1,025; and the percentage of total population in high school has grown from 0·68 to 4·76. There are other difficulties that we do not share. "Many of the comparisons between American secondary schools and secondary education in England fail to take into consideration the increasing complexity of the high school population." For example, the author gives figures from 'a typical state' showing that in cities of New York State the age of first-year (ninth-grade) pupils varied from ten to twenty-one (the peak age being, of course, fourteen); further, that 14-year-old pupils are found in every grade from the first to the twelfth. Another fact that will come as a surprise to many English readers is that secondary education is hampered by the large number of small schools: one is apt to think of high schools as gigantic and rather soulless emporia of knowledge. On the contrary, the figures for 1934 show that 19·9 per cent of public high schools had under fifty pupils, that 70 per cent had under 200, whilst only 6·2 per cent had 1,001 and over; in 1918 the percentage of schools under fifty was no less than 50·5. It needs no arguing that schools with so few pupils cannot provide the staffing and equipment for a modern secondary education. A question discussed in the Spens Report crops up also in America, the comprehensive as opposed to the special type school. (Incidentally, one may remark what a much better term 'comprehensive' is than the vile word 'multilateral,' with its echoes of unilateral appeasement.) Mr. Willey approves the comprehensive school, as being (amongst other reasons) typically democratic. Another interesting feature is the growth of the junior high school, which, by putting the start of 'secondary' education two years earlier, resembles to some extent the Hadow scheme. Again, in view of the numbers who fail to complete the course, he emphasizes the need to make every year of real value to the pupil. "the earlier traditional procedure endeavoured to gear the entire high school programme to the four-year college-preparatory curriculum." The words may be different, but how familiar is the complaint. Readers will find interesting proposals for a curriculum that has more relevance than the traditional one to the needs of the vast heterogeneous mass of young Americans who are growing up in the world of to-day.

Teaching and Testing English: By P. B. BALLARD. (University of London Press, pp. x+167. 5s.)

The author has described this book as half old and half new. He has retained in revised form the most valuable parts of his *Teaching the Mother Tongue*, and has added chapters on speech training, voice production, Sir Phillip Hartog's method of teaching composition and a section of four chapters on testing English.

This new book should prove most stimulating to teachers of English in junior and senior schools, as the author expresses wittily and wisely the results of his observations and experiments on methods of teaching and testing English.

Teachers would probably have found the book even more helpful if instead of the greater part of the interesting historical accounts of critics who attempted to defend a standard of English the author had given them a fuller account of his views on the teaching of literature.

Few teachers will agree that 'ample suggestions for varying the type of exercise will be found in Part II, Chapter II' (p. 77), for this chapter describes only four types of tests in English and although pupils may like answering them their value in teaching English will depend on the manner in which they are used by teachers. Devices for testing English may be valueless as methods of teaching English as the author himself emphasizes on p. 161.

Students in training should certainly read this book, which should also be in the teachers' library of every school in which pupils between the ages of five and sixteen are taught English.

A.E.C.

Experimental Studies of Colour and Non-Colour Attitude in School Children and Adults:
By BENGT J. LINDBERG. *Acta Psychiatrica et Neurologica Supplementum XVI.*
(Copenhagen, 1938, pp. 170. Price: 15 Swedish crowns.)

The monograph is an account of the results obtained from the application of two tests devised by the author: the Ring test and the Sorting test, a record being made of each subject's tendency to devote his attention primarily to the coloured or to the non-coloured elements in the tests. The main conclusions reached from the testing of 2,446 elementary school children are the decrease of colour response with increasing age, the lack of frequency of colour attitude among the more intelligent groups, a certain amount of correspondence between colour attitude and 'degree of liveliness,' and a sex

difference, girls showing a lower degree of colour attitude than boys. This sex difference was confirmed when a group of 218 adults was tested, but age (ranging in this group from twenty to sixty) showed no correspondence with colour attitude.

A testing of neurotic patients (over 400 in attendance at two psychiatric clinics) pointed to some relation between colour and non-colour attitude and the substable and subvalid insufficiency types as classified by Sjöbring, the former showing the greatest colour attitude, the latter the least colour attitude. A connection was also established between the experimental findings and bodily type.

The monograph contains a well-written historical introduction, as well as a valuable discussion of the findings of the experiment with reference to typology and psycho-pathology. The experiment is of interest not only to those working on this particular problem, but to those who have to deal with psychiatric material.

M C

Education as a Social Factor. By M. L. JACKS (Kegan Paul. 5s. net.)

The author has stated in terms of modern life some of the fundamental truths about education. These truths need constant re-statement, especially at times when there is a danger that changes in educational methods under the spur of popular demand may be made without giving due weight to eternal truths.

The sincerity of the author and the strength with which he holds to his main principles win approval, but the author would probably be one of the first to point out that his book should be read critically and not be absorbed uncritically. If the book is read in this way it must be a stimulus to continued reflection on educational problems and lead the reader to read more widely and so become more clearly aware of additional fundamental truths which may help to balance those given in this book. One illustration will suffice. The author is so deeply conscious of the influence of parents, teachers and priests on children that he appears to be unaware of the reciprocal influence of children on parents and other adults.

It is perhaps due to the fact that the substance of this book is a series of lectures that it contains a few statements which would probably escape notice in an oral lecture, but are very noticeable in a book meant to be read. Thus the last sentence of the Preface appears to contradict the main theses of the book, and it is difficult to harmonize the statement that in the training of teachers we are notably behind Germany (p. 193) with the spirit which led the author to describe educational methods in Germany in terms which imply disapproval (pp. 21-23). Some elementary and secondary schools will deny the accuracy of the statement that in elementary and secondary schools games are played once a week (p. 198).

In spite of these minor faults the book is valuable as the expression of the faith of a head master of one of the most important public schools in England. It should certainly be read by all who directly or indirectly are concerned with the functions of home, school, and church towards the creation of human beings educated in all citizenship.

A E.C.

Practical Problems in Teaching Method: By DAVID F. ANDERSON. (University of London Press, pp. 156. 4s. 6d.)

This original contribution towards the solution of some problems of teaching method consists of verbatim accounts of seventeen oral lessons conducted by different teachers in a number of Scottish schools followed by a series of questions to be answered by students of methods of teaching. These questions are designed to make the students reflect on the principles which have or might have been applied in the lessons. References are made to books containing expositions of these principles. These references could with advantage have been more numerous.

The book will undoubtedly be very useful to teachers of method who are unable to discuss observed lessons with their students and may usefully supplement such discussions by emphasizing principles not well illustrated in the observed lessons.

The lessons reported cover a variety of subjects—English, history, geography, mathematics, science and music.

An addition to the book which would increase its value to those who are unable to discuss observed lessons would be verbatim accounts of discussions between students and teachers on a few of the reported lessons.

Is it too much to hope that following the lead given by Mr. Anderson in this book we may in the future have gramophone records of actual lessons for detailed analysis and discussion?

A E.C.

How Adults Read: By GUY THOMAS BUSWELL. (Supplementary Educational Monographs, Chicago, pp. xiii+158. \$1.50.)

This monograph shows that for many adults in Chicago reading is not the rapid fusing of meanings of groups of words into clear ideas but merely word-by-word deciphering accompanied by conscious effort, and that reading can only become a pleasurable activity leading to independence of thinking when the conditions which make for slow and inefficient reading are understood by teachers.

The reading of 1,120 subjects taken from all walks of life was judged by reference to certain basic principles, including span of recognition, regularity of eye movements, frequency of regressive movements, duration of fixation pauses, extent of vocabulary, and, in oral reading, the extent to which the eye reads ahead of the voice.

Remedial exercises were used and the results recorded. The average gain of twenty-five adults after 10-15 hours of remedial instruction was 15.8 per cent. The author shows the importance of exercises not merely to eradicate bad and fix good habits but to develop correct attitudes to reading.

This monograph is specially deserving of serious attention by those who are concerned with adult education, but it is equally valuable to all teachers who realize that the main aim in reading is interpretation and that the ability to interpret depends largely on certain basic activities which all teachers should seek to foster in their pupils.

The First Five Years of Life: By ARNOLD GESELL and Others (Methuen, pp. xiii + 393, 21s. net)

This new volume from the Yale Clinic is further described as 'A Guide to the Study of the Pre-school Child'. The first part is by Dr. Gesell himself, and provides an up-to-date survey of the results of the large amount of research that has gone on now for many years at the Yale Clinic. After general discussion of the nature of mental growth, Gesell turns to a detailed study of the first year of life, giving typical descriptions of the behaviour and accomplishments of the infant at one, four, six, nine, and twelve months of age. Of course, there are, at these stages, enormous individual variations, but Gesell attempts to draw a recognizable picture of the 'average' child of these periods. The next chapter gives similar sketches of typical behaviour at eighteen months, two years, three years, four and five years. These are all valuable in that they are more than the itemized results of specific tests, though they are based to a very considerable extent upon tests and observations on specific points.

Part II of the book gives more detailed, specialized accounts of certain aspects of development. Thus Dr. Halverson first writes on motor development, including walking and prehension. Dr. Helen Thompson provides a long chapter on 'adaptive behaviour,' including drawing and number concepts. Dr. Castner deals with language development and others collaborate on personal and social behaviour, including play activities, developmental detachment, and so forth. All these form valuable supplements to the more general unified descriptions given in Part I.

In Part III the chief section deals with what is called the 'development examination.' As usual, Dr. Gesell avoids confining his tests to those of general intelligence. The book concludes with schedules of the standard tests. It is useful to have a revised list of these according to the latest results obtained at the Yale Clinic.

It will be seen that even for those who are familiar with the numerous publications of Dr. Gesell and others of the Yale Clinic, this further general summary and survey forms a most useful and important contribution to the study of the pre-school child.

C.W.V

L'Enfant et l'Adolescent Instables: By J. ABRAMSON. (Alcan Presses Universitaires de France, pp. xix + 390. 50 fr.)

This book is based upon observations over a period of fourteen years and covering some 1,200 cases at the Clinique Annex de Neuro-Psychiatrie Infantile. After an introductory section, partly historic, partly dealing with preliminary ideas, the second section is devoted to a description of ninety-two representative cases. The third part gives an analysis of general intelligence, special intellectual aptitudes, affective tendencies, etc. The fourth part of the book treats the subject from the point of view of development, considering heredity and kinds of degeneracy and the influence of the early years. The book is written with clarity and moderation and affords a substantial amount of new evidence on the difficult problems concerned.

We may summarize some of the main findings. First is the already familiar one, that instability is rarely attributable to one factor, usually being determined by a combination of factors, some of which are innate and others environmental. Emphasis is put upon the influence of psychopathic heredity and 'fragilité neuro-psychique'. In discussing the influence of stability upon intelligence or at least its association with intelligence, a distinction is made between 'intuitive intelligence,' which among the children studied was generally normal, and 'reflective intelligence,' which is acquired with the aid of discipline and perseverance and was very inferior to that of normal children.

We have said enough to show that the book is one which is worth adding to any library of child-psychology, when it is again obtainable.

Studies in Early Graduate Education: by W. CARSON RYAN. (Carnegie Foundation for the Development of Teaching.)

This is a description of the origin of the John Hopkins, Clark, and Chicago Universities. These have grown rapidly from beginnings within memory of many people who are still living. The study before us examines the features which the author considers to have contributed most to the success the three universities have achieved.

The Child and His Family: By CHARLOTTE BÜHLER. (Kegan Paul, pp. viii+187. 10s. 6d. net.)

This book is primarily concerned with a method of observation of children and the investigation of relations between the child and his family. The method is exemplified by the detailed study of six families in Vienna between 1931 and 1933, these studies being carried out by various collaborators. The object was to make a quantitative study of the child's environment and his reaction to it by recording the frequency of certain types of response, the collaborators being specially trained in the meaning of the various types of action. The method was not, of course, completely objective, because there is a doubt at times as to the interpretation of the purpose of the child. The inventory of 'situations' include the following: social intercourse, domestic situations, play; and the inventory of 'intended purposes' includes social intercourse, pedagogical (whether on the part of the adult or on the part of the child, in asking questions and seeking permission), charitable—giving or demanding help, economic—taking care of things, destroying things, and so forth. To some this list will appear somewhat arbitrary, for it would seem possible to draw up an equally comprehensive list on a different basis; furthermore, there would seem to be some overlapping and some difficulty at times of interpretation, though the correlations between different observers in this section of the enquiry were fairly high.

The details about the individual families are interesting, but the interpretations of some of the facts seem very doubtful. Thus on the basis of the figures for four boys (p. 179) it is suggested that lenient treatment was more effective with boys than was strict treatment, whereas, surely, it might well be that the naughtiest boys received the strictest treatment.

Nevertheless, this report is very welcome as a description of a new scheme to which further experience may suggest improvements leading to a useful method for observation and recording.

The Individual in the Group: By FLORENCE M. SURFLEET. (Allenson and Co., pp. xiv+190. 6s. net.)

This book gives a number of useful hints on problems which may occur anywhere when medium-sized groups of people are formed. It cannot be regarded as a text on leadership or social relations, or even on reading and writing as the foreword suggests, it is more of the nature of a collection of soliloquies on topics which are not closely knit together and do not stick to the title of the volume. But it is pleasantly written, and those who are trying to direct groups of readers can extract from its pages something helpful for their purpose, although they must not expect to find it is a text-book.

Arithmetic in Grades I and II: By WILLIAM A. BROWNELL. (Duke University Press, 1941, pp. 175. \$1.50.)

In this monograph the author sets out to answer the question: "Can and should the primary grade child learn arithmetic, and, if so, what should be the content and form of the teaching?"

Mr. Brownell summarizes several previous relevant investigations, and gives details of an original enquiry to determine the results of a systematic programme of arithmetic instruction in Grades I and II; he arrives at the conclusion that a child should be taught arithmetic from the beginning of its school career provided that certain general principles of method are observed.

Although much that the author suggests is already common practice in the more progressive infant schools in England, readers will find much to stimulate and interest them in this book. There is a good bibliography and a most useful classification of the topics of the research studies mentioned in the text.

Assessment of Educational Films. (Scottish Council for Research in Education. 1s. net.)

A report of an inquiry made under the auspices of the Scottish Council for Research in Education on conditions governing the use of the film. Questionnaires elicited the appraisals of the film by pupils and teachers and some general principles have been abstracted. Title, content, aesthetic and psychological values, arrangement and treatment of captions, etc., have received attention. The teacher's function is also dealt with.

The matter in the pamphlet is much to the point of the research and should help teachers to make good and improving use of the cinema as a visual aid.

The Nineteen-Forty Mental Measurements Yearbook: Edited by OSCAR K. BURROS. (The Mental Measurement Yearbook, New Jersey, pp. xxi+674. \$6.)

This substantial volume provides a useful reference book on many aspects of mental measurement, an exhaustive examination being made of recent publications on tests and examinations. The volume follows on four earlier publications dealing with the years 1933-38. There is a comprehensive index of titles and of authors. The extent of the ground covered will be indicated when we mention that authors number some 2,500. A special feature of the book is that it gives excerpts from reviews of books dealing with tests. With the earlier volumes it should prove a valuable book of reference.

An Anatomy of Inspiration: By ROSAMOND E. M. HARDING, Ph.D. (W Heffer and Sons, Ltd., Cambridge, pp. xiii+118. 4s 6d.)

The successfully achieved and useful object of this interesting book is the collection and classification of the revelations made by men of creative genius as to the motives and inspiration underlying their achievements, in order to provide data for the more scientific investigation of the creative process. The work, therefore, includes a mass of classified quotations, which are skilfully connected, and related in each chapter to a specific aspect of creation in literature, the arts and in science. While the book provides an interesting, original and useful contribution to the data of aesthetics, the general reader interested in the process of creation should find it equally attractive. The concluding chapter contains a concise synthesis of the main views previously suggested. A very valuable bibliography of fifteen pages is included, as is a most useful index. It is an admirable little book.

J.M.

Training Industrial Workers. (N.I.I.P. 3d.)

Elements of Industrial Welfare. (I.W.S.)

At the present time there is no need to labour the importance of means for turning out efficient workers at great speed. The pamphlet summarizes some of the problems and the methods that have been adopted to solve them. It is an interesting little document.

The second pamphlet summarizes the duties of a welfare and personnel supervisor in war-time. It deals with engagement of labour, introduction to work, records means of obtaining information, health, accidents, sickness, etc. A classified bibliography forms a useful section of an appendix, which also contains suggestions on organization of welfare and personnel departments and records.

The Education of Your Child: By JOHN LOUIS HORN. (Stanford University Press, pp. 208. 14s.)

This is an American book to meet the needs of sensible American parents. It discusses education, types of schools, progress in schools, provision for the sub- and super-normal, and so on, with common-sense and clarity.

Some of what it says applies to England, but the greater part, owing to the different organization of education, does not.

N.S.

Establishment of a National System of Education in New South Wales: By C. C. LING. (Australian Council for Educational Research. 4/-.)

This is a contribution to the Library of Information on the history of education in Australia; well worth reading and among other matters another tribute to the services of James Kay-Shuttleworth in the cause of public education, not only through his principles but also by the lifework of one of the early Battersea teachers, William Wilkins, who carried on pioneer work in New South Wales.

OTHER PUBLICATIONS RECEIVED.

The Control of Language: A. King and M. Ketley. (Longmans. 3s. 6d.)

True and False Democracy: N. M. Butler (C. Scribners and Sons)

Progress in Education in Wilmington.

Bibliography of Canadian Education. (Department of Educational Research, Toronto.)

Selected References in Education, 1937 and 1938 (Chicago University.)

